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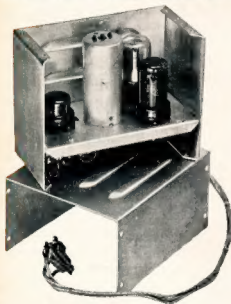
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AMATEUR RADIO

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EDITORIAL



On Thursday, 2nd September, there passed away suddenly one of the best-known figures in the Amateur Radio world—Kenneth B. Warner, W1EH, victim of a heart attack.

As Managing Secretary of the A.R.R.L. and Editor of QST, K. B. Warner was known and respected by Amateurs the world over. It was his genius for organisation that brought the A.R.R.L. to the forefront of Amateur Radio societies, his capable management which made QST and the Radio Amateur's Handbook the Amateurs' Bibles. His guiding hand will be sorely missed by the A.R.R.L.

K.B.W. was but 53, young as old-timers go, but he had been the keystone of the A.R.R.L. and QST for more than 29 years, surely a life dedicated to the service of the Ham fraternity.

So passes Kenneth Warner, in company with two of our own most loved brothers, Howard Love and "Pop" Medhurst. What tales of brass-pounding and W.A.Cs. there must be in that Other World today, of DX long forgotten, and of Ham brotherhood and kinship.

No doubt the memory of these, our fellows, will be kept alive in Contests and the like, but always the individual Amateur can do his bit in fostering the spirit they so nobly and well helped to bring into being.

By our gentlemanly conduct on the bands, by our clean operating, and by our endeavours to keep the Ham game what they have made it, we will remember them.

A.H.C.

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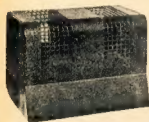
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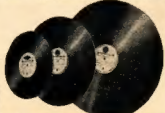


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A Receiver, a Trapezoidal Pattern—So What?

BY R. S. EDGAR*, VK5RS

It is well known that the c.r.o. may be employed for the purpose of delineating that distortion which may obtain in the modulated r.f. stage of an a.m. transmitter.

If the vertical excursion of the spot be proportional to the instantaneous r.f. amplitude, and the horizontal travel be proportional to the instantaneous voltage output of the modulator, the production of a trapezoidal pattern denotes freedom from distortion. At 100% modulation the pattern becomes triangular, while overmodulation is accompanied by the formation of a horizontal line extending outwards from the central vertex. Should harmonic distortion be present in the absence of overmodulation the slant sides of the figure will be curved, while phase distortion only produces elliptical sides when the carrier is sinusoidally modulated.

These facts have apparently given rise to the impression that transmissions may be monitored at a distance by employing a c.r.o. in conjunction with a receiver, the vertical plates of the c.r.o. being actuated by the i.f. output, and the horizontal plates being driven directly or after amplification, by the product of demodulation. The quasi-trapezoidal patterns thus obtained are supposed to be read in precisely the same way as those discussed above.

Unhappily, such a conception is entirely erroneous.

In virtue of their selectivity requirements, the final i.f. stages of standard communication receivers are normally designed to handle only a limited range of frequencies. For a.m. reception their band-pass characteristics are such that the maximum frequency-difference between components transmitted without extreme attenuation lies in the lower

*Morshead Avenue, Springbank, S.A.

audio range, whence the periods of these components bear a ratio of approximately unity.

The summation of a series of sine waves of different frequencies gives rise to a complex wave whose peak amplitude is a function of time. If the difference of component frequencies be small compared with their absolute values, the upper and lower envelopes of such an a.m. wave must represent the mirror images of each other in the axis of time when the instantaneous amplitude is plotted against time on rectangular Cartesian coordinates. This follows directly from the fact that, over an interval of time somewhat larger than the period of the lowest-frequency component present, each will have undergone a complete cycle. Since their phase relationships change negligibly in this interval the peak positive and negative values of their sum must be equal.

Thus the output from the secondary winding of the final i.f. transformer of any normal receiver comprises a symmetrically-modulated wave, irrespective of the nature of the signal received and/or distortion and spurious frequencies generated in preceding stages (assuming negligible stray coupling).

The upper and lower envelopes of such a wave are, of course, defined by a series of discrete points, but for the present purpose may be taken as continuous and therefore representable by the function—

$$y = \pm f(t)$$

where $f(t)$ contains audio components only.

If the wave be demodulated without distortion the detector output is necessarily of the form—

$$a f(t) + b$$

where a and b are constants, since the product of demodulation must be a reproduction of the modulation envelope.

Should, now, the i.f. and detector outputs be plotted on the vertical and horizontal axis, respectively, of rectangular Cartesian co-ordinates, the figure obtained must be trapezoidal in nature. This may be seen as follows.

The slant sides of the figure are defined by the simultaneous equations—

$$y = \pm f(t)$$

$$x = a f(t) + b$$

whence

$$y = \pm \frac{x - b}{a}$$

for all values of t , i.e. y is a linear function of x .

The slant sides are therefore rectangular, and the complete boundary an isosceles trapezium.

It is immediately apparent that, should the deflector plates of a c.r.o. be fed from the i.f. output and a linear detector, a trapezoidal pattern invariably obtains.

A limiting case of some theoretical interest is that in which the modulation envelope is a stepped wave. $f(t)$ is no longer single-valued function of time, and the solid trapezoid degenerates into a series of vertical lines which, nevertheless, lie within a trapezoidal boundary.

The shape and size of the c.r.o. image are functions of the depth of modulation of the i.f. output. As the modulation factor increases progressively from zero to unity, the image, at first a vertical line, becomes trapezoidal and then triangular. Overmodulation increases the dimensions of the triangle without change of shape, and intensifies the illumination of the central vertex.

Should a trapezoidal pattern not be obtainable from any existing set-up of this type, the source of distortion is to be found in the second detector and any ancillary amplifying stage. Either non-

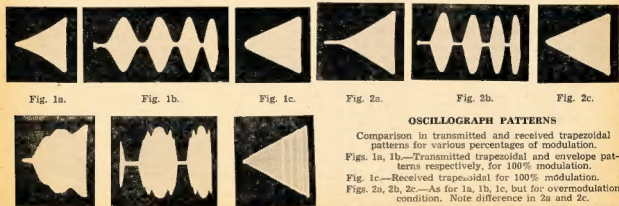


Fig. 1a.

Fig. 1b.

Fig. 1c.

Fig. 2a.

Fig. 2b.

Fig. 2c.

OSCILLOGRAPH PATTERNS

Comparison in transmitted and received trapezoidal patterns for various percentages of modulation.

Figs. 1a, 1b.—Transmitted trapezoidal and envelope patterns respectively, for 100% modulation.

Fig. 1c.—Received trapezoidal for 100% modulation.

Figs. 2a, 2b, 2c.—As for 1a, 1b, 1c, but for overmodulation condition. Note difference in 2a and 2c.

Figs. 3a, 3b, 3c.—Patterns in same order, but for severe overmodulation and distortion.

linear demodulation and amplification or frequency discrimination will produce curvilinear distortion of the image, since the complex audio wave-form will be distorted in transit. Although a finite and equal time delay of all component frequencies passed (phase angle shift proportional to frequency) is permissible in the standard distortionless video amplifier, its effect in the present instance is the production of a double-ended pattern. Thus, not only is freedom from phase distortion a prerequisite of accurate delineation, but also freedom from phase shift.

In those cases where the detector is fed from the penultimate i.f. stage a further source of distortion is present, its effect being manifested as an alteration of the modulation envelope in its passage through the final i.f. stage. A detailed description of i.f. channel distortion is beyond the scope of this article but the following points should be noted.

(1) Harmonic distortion in the final i.f. tube.

If the dynamic mutual characteristic of this tube involve third or higher-order odd powers, some of the harmonics generated will fall within the i.f. band-pass. Spurious sidebands are therefore added to the product of linear amplification with a consequent alteration of the modulation envelope.

Such an effect is very apparent if a sharp cut-off tube be overloaded with excess drive, and may be appreciable in some variable- μ tubes when working, as is often the case in the present application, at high level.

(2) Phase and frequency distortion in the tuned output circuit.

An a.m. wave of constant frequency will be faithfully reproduced by a linear circuit element only if the following requirements be met:—

- (a) That carrier and sidebands be equally attenuated;
- (b) That the angular phase shifts of each sideband associated with a given audio frequency be equal and opposite with respect to carrier shift and proportional to that audio frequency.

Under these conditions no modulation distortion will be introduced, but a time delay will be experienced by the modulation envelope, except in the particular case where all phase shifts are zero.

Although sideband attenuation in a broadly tuned output circuit may be slight, the immediate requirement of zero phase shift cannot be met. Even in the case of a single tuned circuit with a Q of only 25 and a consequent attenuation of about 3 db at 10 Kc. off resonance (455 Kc. i.f.), a phase shift of approximately 10° is experienced by sidebands spaced $\frac{1}{2}$ Kc. from the carrier frequency. This i.f. shift is carried over into the modulation envelope, and, in the case of sinusoidal modulation, would be effective in introducing an easily visible elliptical distortion.

When the output circuit is not exactly tuned to the incoming i.f. carrier frequency, asymmetrical sideband cutting

and phase shift occur. This is instrumental in producing at the output a wave which may be considered to be both amplitude and phase-modulated—a further type of modulation distortion.

In certain cases an imperfect set-up may yield a quasitrapezoidal pattern on one transmission and not on another. The extent to which this occurs is, in general, dependent on the sideband width transmitted and the band-pass characteristics of the receiver. Time-delay and frequency distortion in the detector, audio amplifier and auxiliary i.f. stage are more marked at the higher modulating frequencies, so that an overmodulated transmission with its large sideband coverage may well be associated with more than average visual distortion.

Nevertheless, there remains the fact that the receiver pattern bears no direct relation to the transmitter pattern, and that any departure from a trapezoidal image at the receiving end is the outcome of faulty design.

The visual determination of modulation percentage at the receiving end also appears to be a questionable practice, since the i.f. modulation envelope rarely bears any resemblance to that associated with the signal received.

This may in part be due to the modulation rise which generally accompanies non-linear tube operation as discussed above, the possibility that the receiver is not exactly tuned to the incoming carrier frequency, or the fact that regeneration or spurious frequencies may occur in the r.f. or i.f. stages. Even when these factors are unappreciable there remain sideband cutting and non-linear phase shift. The effect of these depends largely, of course, on the nature of the modulation envelope transmitted and the overall selectivity of the receiver. For this reason it is difficult to formulate a general rule, but it is clear that some caution should be exercised when checking modulation depth, especially if the incident signal be nearly fully modulated.

For the purpose of illustrating the argument, an artificial transmitter and receiver-c.r.o. combination were set up.

The transmitter comprised a signal generator tuned to approximately 455 Kc. Harmonic distortion was introduced by running the oscillator heater at reduced voltage, and applying heavy external modulation, which in all cases was sinusoidal. A detuned i.f. transformer inserted at the output terminals provided asymmetrical sideband cutting and phase shift. A video amplifier was connected in cascade to provide sufficient voltage to drive the c.r.o. directly.

The receiver consisted solely of an infinite-impedance detector and a single stage voltage amplifier. The latter was not free from appreciable phase shift at the higher audio frequencies, and it was consequently necessary to maintain the fundamental modulation frequency at not more than 200 c.p.s.

No special advantage would have obtained had any stage been run at radio-frequency, since it was possible, with

the existing hook-up, to present to the detector a carrier of normal i.f. frequency and any required degree of distortion.

Figs. 1a, 1b, and 1c show respectively the "transmitter" trapezoid, the "transmitted" wave on a quasi-linear time base, and the "receiver" trapezoid for a fully modulated transmission. Some curvilinear distortion is visible at the transmitting end.

Figs. 2a, 2b, and 2c illustrate, in the same order, the effects associated with an overmodulated wave, while, in the remaining figures, the "transmitter" distortion has been increased to an astonishing degree. The departure of the "receiver" pattern from the trapezoidal (or triangular) form is, in all cases, slight, and then only a function of detector and audio-amplifier distortion.

Thanks are extended to Mr. D. J. Barrow for the photography featured.

HINTS FOR FS6 USERS

CRYSTAL CONTROLLING FS6 AND IMPROVING THE MODULATION

The FS6 is a very convenient and useful set, but it has several drawbacks, firstly, the frequency is not very stable, and secondly, its modulation is poor.

On taking the transmitter unit from the case, a small name plate will be seen near C4, remove this plate, and in approximately the same position, drill the aluminium chassis to take two banana plug sockets at crystal holder pin spacing. One of the sockets will need to be insulated from the chassis and it is a help when drilling the holes to loosen the screws holding the oscillator tuning assembly, and partly withdraw the assembly. Don't drill into the final tank coil.

Fit a soldering lug under each socket on the oscillator side of the chassis, connect the insulated socket to the oscillator grid (this is soldering lug No. 9 on the terminal strip) and connect the other lug to the nearest earth point.

On the top of the valve compartment will be found a resistor and condenser mounting strip, remove C11 entirely. This was the grid coupling condenser. Change R7, which is part of the grid network of the modulator tube, from 2,000 ohms to 10,000 ohms. This value seems to give the best all round results. Any increase results in severe overmodulation and distortion as checked both by ear and with the c.r.o.

In tuning up the set in the absence of a plate milliammeter, it will be found that with the tuning condenser set approximately two dial divisions on the high frequency side of the position where the crystal stops oscillating, operation will be very stable, and there will be no trouble getting oscillation started.—VK3PW.

Interstate on 50 Mc.—How It Happens

On a number of occasions recently Interstate working has been possible on 50 Mc. for periods of the order of half an hour. Such conditions are usually due to what is known as "Sporadic E."

The Ionosphere consists of two main reflecting regions, the E region at a height of about 60 miles and the F region 150 to 300 miles up. The F region will very seldom reflect 50 Mc. waves under any conditions. The E region has a fairly regular diurnal variation of critical frequency (i.e. the highest frequency it will reflect straight down again) rising to a maximum of about 4 Mc. at midday; but, in addition, it may show sudden erratic increases in ionisation which will reflect higher frequencies. For a given intensity of ionisation a much higher frequency will be reflected at oblique incidence than at vertical incidence, e.g. if the highest frequency at which a signal will come back vertically is 10 Mc., then communication between stations 1,000 miles apart might be possible on a frequency of the order of 50 Mc. For such communication, however, the reflecting surface would need to be midway between the two stations.

"Sporadic E" ionisation is patchy in space as well as in time, as it is usually a cloud of ionisation moving at a speed of some few miles a minute. Therefore, when communication is established between two points (whether one-way or

two-way) it indicates that such a cloud was present somewhere approximately half-way between those points. From an examination of the time when there was a circuit between different points it is thus possible to trace the movement of the cloud.

The Radio Research Board is interested in tracing these movements, and would be glad to have information from Amateurs of any transmissions made or heard on 50 Mc.

As an example of what can be done, take the case of 4th July, 1948.

It was reported that 4BT had worked 2NO from 1400 to 1450 hours on 50 Mc. Radio Research Board was making fixed frequency observations on 50 Mc. on this day and the record showed Sporadic E which became very strong after 1200 but faded out at 1340. It was obvious, therefore, that the patch of Sporadic E was moving North and had reached a point half-way between 4BT and 2NO at about 1430 hours.

At Brisbane there is an ionosphere recorder which runs through the range 1 to 13 Mc. every 10 minutes. This recorder showed a maximum of Sporadic E at 1400 to 1410 but its maximum frequency was only 4.9 Mc., which would not be sufficient to give 50 Mc. transmission. It would appear, therefore, as if the centre of the patch passed to one side of Brisbane.

There is also an ionosphere recorder at Mount Stromlo Observatory, Canberra. This recorder showed Sporadic E reflections above 9 Mc. from 1200 to 1310 and then cutting off quickly. It looks, therefore, as if our cloud passed almost over Canberra in its travels.

There is a recorder at Hobart but it was out of operation on that day.

As a result of these observations we know that this patch of Sporadic E was moving in a northerly direction but we do not know much about its E-W movement or where its centre was.

We understand that VK4s were hearing VK4s and VK2s that day, and if we had some reliable times from S.A. we could make a much more accurate estimate of the direction of movement of the cloud and also get some idea of its size and velocity. If anyone has such information in his log, please let us have it. Also, when you make or hear 50 Mc. contacts note the time, particularly of cutting out, as accurately as possible.

Mr. Carruthers (VK2PF) has been collecting information and passing it on to the Radio Research Board, so please send it to him. Sam Waters (VK2SC) is now with the Radio Research Board and would also be willing to receive reports.

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AMPLITUDE MODULATION

BY E. A. CHARLES*, VK5YQ

INTRODUCTION A few notes in simple language¹ on some aspects of a.m., many of which are not to be found in the usual shack "handbook." It is hoped they will be of some use when planning new equipment, or when asked to give someone a report on their modulation over the air.

FACTS AND FIGURES All the short wave broadcasting stations of the B.B.C. have their carriers modulated to a maximum of only 80% (on peaks)².

Some of the medium wave broadcast stations of Australia do not transmit any frequencies above 5 Kc.

A change of 1 decibel is said to be just perceptible to the human ear. You have very good hearing if you can detect a change in level of 2 db. The average person can notice a change of 3 db at louder levels, but finds it difficult at weak levels. However, a difference of 3 db can make all the difference between "readable" and "unreadable" on weak signals.

When listening to strong signals on a receiver with a.g.c. (a.v.c.) the "S" meter shows changes in carrier signal level but the a.g.c. limits the audio output. Without a.g.c. there is usually QSB, except on local stations where the ground wave and reflections from miscellaneous objects often produce curious results.

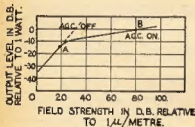


Fig. 1.

An example of one average receiver is a change of only 12 db in audio output for a change of signal input (constant modulation depth) of 60 db. In the diagram (Fig. 1), the slope of the curve AB depends upon the variation of the gain of the controlled tubes with the bias and the amount of delay voltage applied. In this instance the delay voltage is 10 volts and the 30 volts bias is sufficient to change the receiver gain by 48 db.

* 193 Young Street, Unley, South Aus.

¹ Not that I know any other; in accordance with the views of VK3GE and VK2NO—my early instructors.

² List of Broadcasting Stations published by the Bureau of the International Telecommunication Union, 1940.

The 50% increase in r.f. power output at 100% modulation should raise the aerial current by 22% on the unmodulated value; e.g. if the r.f. meter shows 1 amp. line current, it should rise to 1.22 amps. when the transmitter is modulated 100% WITH A STEADY TONE—IF the transmitter is capable of 100% linear modulation. With speech it will show less due to the rapidly changing average and peak levels, and due to the damping of the meter.

The percentage of modulation should read 100% for both positive and negative peaks, and there should be no carrier shift. However, it is possible to have different readings for positive and negative peaks, and carrier shift, with LESS than 100% modulation! This can occur when the transmitter is incorrectly tuned or mismatched. Incorrect tuning can cause over-modulation!

MODULATION The Table below shows the useful power at various modulation levels:—

Percentage of Modulation	Percentage of Total Power in Carrier	Percentage of Total Power in Sidebands
0	100	0
25	97	3
50	89	11
75	78	22
100	66.6	33.3

Approximate depths of modulation for changes of audio input level:—

DB Down	Mod.	DB Down	Mod.
1	89%	7	45%
2	79%	8	40%
3	71%	9	36%
4	63%	10	32%
5	56%	20	10%
6	50%		

The above figures for side-band power hold only for steady tone; for speech the value is about HALF!

Average level of speech is usually around 10 db down on the peak values. Some voices have a change of up to 100% in peak ratio, depending upon just how the speaker voices the sound; i.e. changes in intonation or in pitch. So, using high fidelity audio equipment (no limiting or compression) the average level for voice must be attenuated to below the 30% modulation level, in order to prevent overmodulation on peaks. At one broadcast station I have visited, speech is turned down on the fader so that the PEAKS, as recorded on the monitoring level meter, only reach a level that corresponds to 48% modulation with steady tone input. However, some voices still bring in the over-modulation indicator on certain words!

If you can visit a broadcasting station, you will see the various levels as shown on the line input, and monitoring equipment, and on the percentage modulation meter, and see just what the average level of modulation is for the

different types of music and speech. Listening to the daily distortion and noise tests with 1,000 and 400 cycle tone may give some idea of the performance of your receiver and hearing. Some stations test at levels of 48%, 90% and 100% modulation with 400 cycle tone (i.e. 6 db down, 1 db down and 100% modulation).

OVER MODULATION, SPREAD, SPLATTER AND SPLASH

In a Class C r.f. amplifier, plate modulated where the audio power input is in excess of 50% of the r.f. power input at any instant, or where the Class C stage is incorrectly tuned, or where the negative peaks cause cut-off, the transmitter is over-modulated. The above conditions can cause sharp-fronted waves that generate high order harmonics resulting in the SPREAD of the carrier over quite a few adjacent and distant frequencies with distortion.

It is possible to modulate "200%" on positive peaks and not overmodulate IF you can limit the negative peaks to below 100%; but not normally without introducing distortion. In this case of doubling the positive peaks, four times the audio power would be required (i.e. 200 watts of audio compared to 50 watts for the 100 watts r.f. input) and the Class C stage would have to be capable of linear modulation with this input! And the peak power output becomes nine times the carrier power!!

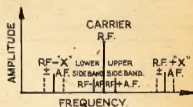


Fig. 2.

It is possible to have high frequency SPLATTER with less than 100% modulation. High harmonics caused by clipping can cause this if not filtered out. Another cause is where the modulator tubes go into supercyclic oscillation (usually with the a.f. signal input) causing the carrier to make appearances, on modulation, higher and lower, and often far removed from the carrier's correct frequency and sidebands, as diagrammed "X" in Fig. 2. Transient frequencies, unrecorded on a meter due to inertia can also cause this effect.



Fig. 3.

³ Grammer, QST, February, 1940.

Fig. 3 illustrates what is known as "sideband SPLASH." This is often heard spasmodically between stations working on nearby frequencies, where the modulating audio frequencies cause the sidebands to overlap. This is often mistaken for overmodulation owing to its unintelligibility.

The "mysterious" b.f.o. method of checking modulation is clearly summarised by VK5AI* as follows:—

"The estimation of percentage modulation (average? or peaks?) via listening on a receiver is an art requiring a high degree of training and perception and a thorough knowledge of the operation of the particular receiver.

"If Ham 'A' reports Ham 'B' as 85% modulation, then Ham 'B' must have a lot of courage to admit his 'technical' inability to measure Ham 'A's' modulation 'percentage'. To demonstrate that his knowledge is equal to that of Ham 'A', he guesses Ham 'A' is modulating 90%! They are both guessing.

"A change of 1 db level causes a change of modulation from 80% to 90%, or 90% to 100%, and if you can detect a change of ONE db with any degree of exactitude, you are pretty good!

† E. D. Reilly, 24 Marshall Terrace, Brooklyn Park, South Australia.

"Turn your receiver off the sideband and you will hear some strange sounds, but that does NOT necessarily mean the station is overmodulating. Turn the b.f.o. on! Turn the b.f.o. off! Turn it off and leave it OFF—you are only guessing; we know you are only guessing—why try to fool ourselves? With an ever-changing but very much less than a maximum possible of one sixth of the carrier power in one sideband containing the audio frequencies, you turn the b.f.o. on, you turn the b.f.o. off, you have measured the percentage of modulation of a COMPLEX wave—NO SIR!

"Try adding a b.f.o. to your b.c. receiver and use it when the b.c. station is modulating at a high percentage of modulation—you may learn a lot.

"You are biting into your carrier OM." "Am I biting into my carrier OM?" YOU TRY to BITE into your carrier OM!"

CHECKING However, the responsibility for not overmodulating rests firstly, finally and solely with the station concerned. What the other fellow says he is hearing is quite likely true, there, but is not necessarily correct. And your signals are less likely to continue to be so on any subsequent transmission, for so many factors can change—and you cannot even argue

unless you are monitoring the signal continuously yourself.

If a c.r.o. is not readily obtainable, a simple Negative Peak Indicator (set to indicate at 80%) is easy to install. The only thorough check I know is viewing the signal using a good receiver and a Panoramic Adaptor. The normal c.r.o. (on receiver or transmitter) does not show splatter when monitoring a signal. The degree of QRM is left to be guessed on receiving checks unless a Panoramic Adaptor is used—with it you "see" the QRM and its relationship.

CONCLUSION When it is known that the antenna radiating efficiency of one of the high power long wave transmitters in England is only 11%, that only at 100% modulation with a steady tone is a maximum of one sixth of the carrier power in one sideband, and that a single-signal or highly selective receiver only makes use of one side-band, then it is readily understood the revival of interest of Amateurs in single-sideband transmission, apart from the less QRM angle.¹

And likewise we begin to realise the advantages of f.m. where there is effectively 100% modulation at all times. Here's hoping we get a n.b.f.m. channel allocated in the new 21 Mc. band.

* Editorial, QST, January, 1948.



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THE RESISTANCE OF FOLDED DIPOLES

The theoretical side of Folded Dipoles has been well covered in past issues of "Amateur Radio," but for those of us who shun the Mathematics involved, this simple Abac, reprinted from Oct. 1947 R.S.G.B. Bulletin, should remove the furrows from the brow.

With the aid of a straight edge, the increase in impedance over that of a half wave dipole by the addition of one or two parallel elements, can be readily ascertained.

The method of using the Abac can be best illustrated by several examples.

Let d_1 = diameter of the driven dipole in inches.

d_2 = diameter of the parallel element, or elements in inches.

D = spacing, centre to centre, of two elements in inches.

K_1 = step-up ratio over a half wave dipole for one parallel element.

K_2 = Step-up ratio over a half wave dipole for two parallel elements.

Example 1—
 $d_1 = \frac{1}{2}'' = 0.25''$,
 $d_2 = 1''$,
 $D = 3''$.

The diameter of the element connected to the feeder 0.25" (d_1) is found on the scale on the right hand side of the paper, point "A".

A straight line is drawn across the chart through point "B", which is the spacing (3"), cutting the left hand scale of $2D/d_1$ at point "C". A similar procedure on the three lower scales, i.e. from "E" at 1", through "F" at 3", to "G" gives $2D/d_2$. The straight edge is now laid between the points "C" and "G", and it cuts the horizontal scale at the point "H", which is 7.7. If the dipole has three elements, the lower

(Continued on Page 11)

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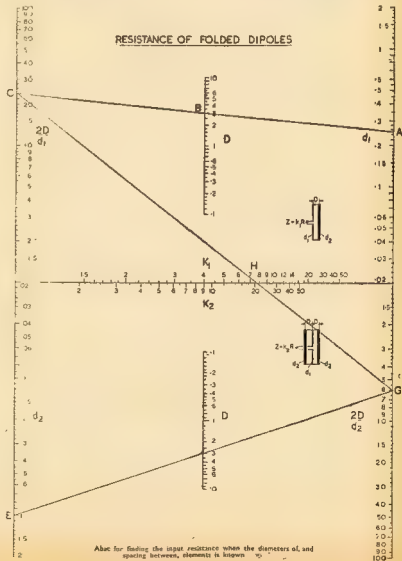
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Resistance of Folded Dipoles

(Continued from Page 9)

horizontal scale is read, giving 20.6. Therefore if we wish to feed a 3 element beam with an impedance of 10 ohms, constructed of $\frac{1}{2}$ " diameter rod for the fed element, and with a parallel cable element 1" diameter, and spaced 8" centre to centre, our co-axial cable should have an impedance of $10 \times 7.7 = 77$ ohms, or with three elements in the folded dipole $10 \times 20.6 = 206$ ohms.

Another application of the Abac is where we know the impedance of our feed line and beam, and wish to know the size of the driving element.

Suppose it is required to make a dipole match a cable of 110 ohms, and it has a director and reflector so spaced, that a single dipole would have a resistance of 10 ohms. The ratio required is therefore 11, which is likely to be obtained more easily with a three conductor arrangement. Suppose we choose a 5/16" diam. rod for the fed element and a spacing between elements of 2"

Example 2—

$$d. = 0.3125" \\ d_r = 2" \\ D = 2"$$

Starting with $d. = 0.3125"$ and $D = 2"$, we get $2D/d. = 12.8$. Laying a line through the factor 11 on the lower horizontal scale gives $2D/d. = 9.1$. Laying a line from here through $D = 2"$, gives a value of $d. = 0.44"$ which is almost exactly 7/16". The dipole will therefore consist of a centre element 5/16" in diameter, with a 7/16" diameter rod, spaced at 2" centres from it, on either side.

Practice in the use of the Abac can be obtained by working out the examples given in May 1947 issue of "Amateur Radio," remembering that the designations a and a_r are radii, and must be converted to diameters for use in the Abac.

In Table 1 following, the generally accepted impedances of two, three and four element close-spaced beams are given. These impedances may vary due to height above ground, and proximity effects, but give an average on which to base calculations.

TABLE 1
Element

Type of Beam	Spac.	Imped.
Two Element Reflector	0.15 λ	24 to 30
Two Element Director	0.1 λ	14 to 26
Three Element Director	0.1 λ }	5
Reflector	0.1 λ }	
Three Element Director	0.1 λ }	9
Reflector	0.15 λ }	
Three Element Director	0.2 λ }	18
Reflector	0.2 λ }	
Three Element Director	0.25 λ }	30
Reflector	0.25 λ }	
Four Element Director 1	0.2 λ }	13
Reflector		

EMERGENCY NETWORK ACTIVITIES

When power lines and telephone communications were interrupted at approximately 0300 hours on 6/9/48 by a cyclone which hit the Mornington Peninsula and South West Gippsland areas, the W.L.A. Emergency Network was again operative.

As no communications existed between Red Hill, Mornington, Frankston, and Rye, and Broadcast Station reception was not available due to a.c. power line failure, 3VL and 3US (Red Hill) operating off batteries made contact with 3ABO (Mornington) and 3UG (Rye) at approximately 1000 hours.

The first link with Melbourne was established via 3CA (Williamstown) who advised the Wireless Branch P.M.G. that a circuit existed. Later 3AWO (Oakleigh) was contacted, this resulting in a direct P.M.G. telephone link with Melbourne.

To ensure that contact between the Peninsula area and Melbourne was not lost, two other circuits were arranged, one via 3BI and 3MH (Eaillart) and P.M.G. telephone to Melbourne, and another via 3BU and 3APG (Geelong) and P.M.G. telephone to Melbourne. Hourly schedules were maintained on these circuits.

During the emergency period 3QZ (Tralagon), 3ALS (Yallourn), 3DI (Leongatha), and 3CI (Foster) were in close contact with 3VL and at the request of 3QZ, who wanted information for the State Electricity Commission as to the position of power supplies in the Foster-Leongatha areas, 3VL contacted 3DI and 3CI.

It might be of interest to mention that 3CI was first contacted by a short wave listener at Foster, who heard 3VL calling for a station in that zone. Messages between Mornington and Red Hill were also handled for the S.E.C.

The network concluded activities at 2000 hours. The equipment used at 3VL may be of interest to those planning emergency work this summer as this station was entirely battery operated. Transmitter: two stage unit, 2.5 and 7 Mc. operation, crystal oscillator 6V8G with power amplifier 6V8G, power input to final approx. 4 watts. Modulator: JT30 microphone with 6J7, 6C6 and 79 class B arranged for plate modulation.

POWER SUPPLY FOR CLASS C WAVEMETER

Those of you who have obtained a Class C Wavemeter, a very simple and efficient power supply can be constructed from the existing vibrator unit. The vibrator itself is removed and a 6X5GT put in its place. The secondary of the vibrator transformer is wired to the plates of the rectifier, the heater is connected in parallel with the primary, and a filter placed in the h.t. from the cathode. With 6 volts a.c. applied to the primary the required voltage for the Wavemeter is obtained.—VK5MD.

Receiver: H.R.O. home receiver. Antenna: half wave centre-fed tuned feeders. Power supply: vibrator operated from 6 volt accumulator. H.T. output 250 volts at 50 Ma. Power supply arranged for switching to transmitter or receiver respectively.

Appreciation is extended by the Central Executive of the Emergency Network and the Victorian Division Council for the work covered by the under-mentioned stations: 3ABO, 3ALS, 3APG, 3AWO, 3BI, 3BU, 3CA, 3CI, 3DI, 3MH, 3QZ, 3UG, 3US and 3VL.

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QUESTIONS AND ANSWERS

CONTEST NEWS

VK-ZL CONTEST

The prizes to hand for the VK-ZL Contest are listed below. At the time of writing, there are insufficient prizes for all sections but more manufacturers have been approached and should more be made available, the list will be completed and broadcast from the W.A.L.A. Bulletin.

The W.A.L.A. is greatly appreciative of the generosity of the manufacturers who have made these prizes possible, and it is hoped that Hamas will take note of these prizes and their co-operation.

Open C.W.—First Prize: Complete complement of valves for 2 inch Oscillograph comprising 1 type 646, 2 647s, 2 68N10Ts, 1 6V6, 1 6X4, 1 5B1P; Second Prize 2 Transmuting Tubes.

Open Phones—First Prize: 100 Watt Universal Modulation Transformer, Type TA908, Second Prize order to value of £5 for Modestone Components.

28 Mc. Phone—Kingsley, S.B.F.N. Adaptor.

14 Mc. Phone—Type 40, Type 40, Type 40.

14 Mc. Phone—Modulation Transformer, 60 watts.

14 Mc. C.W.—Order to value of £5 for Transmitters, Chokes, etc.

7 Mc.—Complete AT3 Transmitter.

Revolving—First Prize: Ferrotype Foundation Kit for Broadcast Set with Extension Speaker, Second Prize: 91 D.C. Mill, Meter with Multimeter scale.

The following are firms who donated the prizes:—**Amalgamated Wireless Valve Co.**, complete complement of valves for 2 inch Oscillograph; **Kidha Harris & Co.**, order for 15 of Edgerton parts, Radio Line Equipment, order for 15 of Transmitters, Chokes, etc.; **Transmuting Tubes**, 1 646, 2 647s, 2 68N10Ts, 1 6V6, 1 6X4, 1 5B1P; **Modulation Transformer, TA908**, Price's Radio, Sydney; **Type 316 Valve**, Ferguson's Radio, Sydney; **60 Watt Modulation Transformer**, Ham Radio Supply, Richmond, Vic.; **Transmuting Tubes**, Vaele Radio, Melbourne; **91 D.C. Meter**, with multimeter scale, Philips Electrical, Sydney; **3 Transmuting Tubes**, Kingsley Radio, Melbourne; **S.B.F.N. Adaptor** and **Ferrotype Foundation Kit** with Extension Speaker.

REMEMBRANCE DAY CONTEST

The Remembrance Day Contest was very popular and 80 logs have been received and are now being checked. It is regretted that the rules could not have been published more widely, but more publicity, but this will be rectified in the future.

"CQ's" WORLD-WIDE DX CONTEST

RULES

1. Contest Period: 0300 GMT October 30 to 0300 GMT November 1 for phone, and 0300 GMT November 1 to 0300 GMT November 2 for C.W.
2. Bands: The contest activity will be confined to four bands, 8.0, 7.0 and 57-18 Mc. Amateur Bands, divided into two sections, C.W. and Phone. Each of these bands will be divided into two sections, the one-operator and more-than-one-operator section. Thus, there will be: (1) one-operator C.W. section, and (2) more-than-one-operator C.W. section; (3) one-operator phone section, and (4) more-than-one-operator phone section. Stations

in each section will compete for awards only with others in the same section. C.W. stations must work C.W. stations, and phone stations must work phone stations only. Stations in the one-operator section, and stations in the more-than-one-operator section of both C.W. and phone divisions may contact each other. Stations may enter in more than one section, but logs must be submitted for each section.

4. Equipment: There will be no limit to the number of transmitters and antennas used. Radio competitions may use the maximum transmitter power permitted under the terms of their licenses.

5. Serial Numbers: C.W. stations will exchange serial numbers consisting of five figures, the first three being the RST report, and the last two being their own zone number. Stations in Zones 1 through 10 will prefix their zone number with zero (01, 02, 03, etc.). Phone stations will exchange serial numbers consisting of four numerals. The first two being the readability and strength report, and the last two being their zone number. Phone stations in zones 1 through 9 will prefix their zone number with a zero (01, 02, 03, etc.).

6. Contacts: Contacts between Amateur Stations on different continents shall count three points, contacts between Amateur Stations on the same continent but not in the same country shall count one point, contacts between stations in the same continent for the purpose of obtaining zone and/or country multipliers, shall be permitted but no points will be allowed for these contacts.

7. Multipliers: Two types of multipliers will be used: (a) a multiplier for each continent, based on each band, (b) a multiplier of 1 for each country worked on each band.

8. Scoring: The Contest score will be the sum of all the above points multiplied by the sum of the zone and country multipliers.

9. Awards: Certificates will be awarded to section winners in each division of

- (a) Each band, call area
- (b) Each continent, call area
- (c) Each band, call area
- (d) Each continent, call area

Certificates will also be awarded to each operator of each winning station in the more-than-one-operator section.

10. Zones and Continental: The W.A.L.A. boundaries as used in the "QO" Contest, January 1947, and the recognised continental boundaries as used for W.A.C. will determine zone and continental boundaries. The W.A.L.A. maps are reasonably accurate, but absolute accuracy cannot be guaranteed. The positive location of a station, the official definition will be final. The latest official country list as published in "QO" for 1946, will be used to determine country multipliers. Copies of the country list are also available from the W.A.L.A. Editorial Office upon receipt of a stamped self-addressed envelope.

11. Eligibility: The contest will be open to all Amateurs but "CQ" staff members are not eligible for awards.

12. Disqualifications: Falsification of logs or illegal operation in any manner will be cause for disqualification. The decision of the judges will be final in all cases.

FIFTY AND UP

VK2 ACTIVITIES—SYDNEY AND EUBURR6

The highlight of activities of v.h.f.s for the month of August was the very successful Field Day conducted by Gladeston District Radio Club on 29th Mc principally and using 144 Mc. as a standby channel. Sunday 29th August was a date and locations selected were Mt. Kuringah, Glaston Heights, Brinsley and National Park Engadine District.

Signals averaged 87-8 in every location from all stations participating, and several mobile stations added interest to the proceedings. Stations co-operating, apart from the four 3.5D7 stations, included 2LZ, RAEZ, 2NO, 2KE, 2YE, 2ALZ, 2FLZ, 2YF, 2YF and 2YF. Equipment consisted mainly of 616 p.p.m. mod. oscillators, super hetero receivers, and 4 to 5 element horizontal Yagi beams. Call signs included at the Club locations were 2LZ, 2ALZ, 2AEZ, 2AGZ, 2AKZ, 2BLZ, 2CLZ, 2DLZ, 2ELZ, 2FLZ, 2GLZ, 2HLZ, 2ILZ, 2JLZ, 2KLZ, 2LLZ, 2MLZ, 2NLZ, 2OLZ, 2PLZ, 2QLZ, 2RLZ, 2SLZ, 2TLZ, 2ULZ, 2VLZ, 2WLZ, 2XLZ, 2YLZ, 2ZLZ, 2ALZ, 2BLZ, 2CLZ, 2DLZ, 2ELZ, 2FLZ, 2GLZ, 2HLZ, 2ILZ, 2JLZ, 2KLZ, 2LLZ, 2MLZ, 2NLZ, 2OLZ, 2PLZ, 2QLZ, 2RLZ, 2SLZ, 2TLZ, 2ULZ, 2VLZ, 2WLZ, 2XLZ, 2YLZ, 2ZLZ.

Activity on other bands has been at quite a low ebb and no break through reported from any section. Stations in the Newcastle District are requested to forward all observations of unusual hap-

penings on v.h.f.s. to 2ADT who has volunteered to act as co-ordinating officer to forward these observations to RFF who is Liaison Officer to Radio Research Board. It is important to note exact times of signal appearing and fading and to note the utmost interest in the University in connection with the work on Ionospheric Predictions.

A contest is being conducted by the R.F.C. Division on v.h.f.s, which include 50, 144 and 222 Mc. and will run over a period of three months commencing 1st October and concluding 31st December. Full regulations and details of the contest appear in 144 Mc. Digest. Full co-operation from all stations active on v.h.f.s. is requested with a view to popularizing and stimulating stimulating interest in general on v.h.f.s. bands.

VK4 JOTTINGS

V.H.F. activity in VK4 is at a low ebb at the present time. The necessary gear to go on, but the 50 and 144 Mc. bands are conspicuously devoid of signals. A movement is afoot however to re-activate 50 Mc. It is hoped that the greater interest in Amateurs brought about the demise of v.h.f. activity in VK4. Our numbers, always small, become smaller every day and seem to be precipitate the end of regular activity.

(Continued on Page 24)

Q.8.—Has anyone any dope on the Air Ministry receiving unit Type 161, No. 10DB/6106?

Q.9.—A half wave antenna is quoted as having an impedance of 73 ohms at the centre and 3,000 ohms at the end. How does one find the impedance at other points along the antenna?

"HETROFIL"

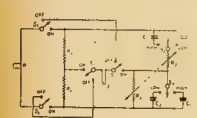
A request to publish the circuit of the "Hetrofil". Here it is, from QST in September, 1939. It is a resonance capacity Wien bridge, inserted between the audio output of a receiver and the phones. The bridge has a sharp rejection notch at a frequency in the audio range determined by the dual variable resistance. This makes it possible to "phase out" a heterodyne since the notch is sharp and deep and so does not cause too much audio distortion for phone reception.

In the figure, P goes to the audio output from the receiver and phones are plugged in at J. The condition for balance of the bridge is that R2 is twice R1, R3 equals R4 and the two condensers C1 equal. If this is so then the rejected frequency is the reciprocal of 2 pi times R3 C1.

S1 switches the audio either straight to the phones or through the Hetrofil. S2 changes the frequency range, the high range going down to 350 cycles and the low down to 65.

Using commercial tolerance components there is an insertion loss of about 10 db and the attenuation in the notch is about 60 db. And it is a lot cheaper than a crystal filter.

Some suitable ganged potentiometers (50,000 ohms) have been in disposals equipment lately. The values of the condensers C1 for a suitable frequency range can be found from the equation above.



The "Hetrofil" circuit.

- C1—0.05 uF.
- C2—0.25 uF.
- R1—1,000 ohms.
- R2—2,000 ohms.
- R3—R4—10,000 ohms, variable.
- J—Phone Jack.
- P—Phone Plug.
- S1—4 Pole Double Throw Switch.
- S2—2 Pole Double Throw Switch.

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MINIATURE DIAL

This useful dial of 2" diameter, is engraved 0-100 degrees, and fitted with a fluted instrument knob. It is available either for direct drive, taking a $\frac{1}{8}$ " spindle, or fitted with a precision 10:1 reduction slow-motion drive. Two finishes are supplied—matt black or matt silver, with contrasting engravings. An index strip is supplied. Fixing is by two 4 BA bolts, which are supplied.

Cat. No. 595 Direct Drive.
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Cat. No. 632 Direct Drive.
2" dial Silver finish ... 11/-
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Famous Eddystone Knobs and Dials are available for every Radio need . . . for Receivers, Transmitters, Frequency Meters, Test Equipment and Amplifiers, etc. Those illustrated are just a few selections from the latest Catalogue (Pages 7 and 8).



HIGH - GRADE INSTRUMENT KNOBS

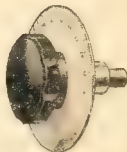
A high-grade fluted knob of polished black bakelite, 2 1/2" diameter, with brass insert for $\frac{1}{8}$ " spindle. Fitted with "two grub screws".

Cat. No. 1076 ... 4/8
As Cat. No. 1076, but 1-3/8" diameter ... 3/1
Cat. No. 1089 ... 3/1

POPULAR GRADE INSTRUMENT KNOBS

This fluted knob, shown above of black bakelite with brass insert, is 1 1/2" in diameter and takes a $\frac{1}{8}$ " spindle. It will be found particularly useful where space is restricted. Two larger sizes are also available.

Cat. No. 591—2 1/2" Instrument Knob ... 3/8
Cat. No. 592—1 1/2" Instrument Knob ... 2/7
Cat. No. 593—1 1/4" Instrument Knob ... 2/-



SLOW - MOTION DIAL

A low-noise dial of excellent design, dialling, fitted with a summer reading device, and confidently recommended for applications requiring high quality dials. The outer scale is $3\frac{1}{2}$ ", and a large fluted instrument knob is fitted. The flange is matt silver with black markings. The reduction ratio is 10:1.

Cat. No. 637 ... 29/7



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HOWARD LOVE—VK3KU

With the sudden passing of Howard Kingley Love on the morning of 29th July, the radio industry in general and the Ham fraternity in particular lost one of its most widely known and greatly respected members.

He had been associated with the radio industry for so long that it is little wonder that he was so well known. He was active in the interests of the industry and at times occupied with desperate duty. He was also active in various trade associations. He had travelled widely and his opinions were sought after and listened to with great interest by other leaders in the industry.

But it was as an Amateur Radio operator that the name of Howard Love became as a household word, and it would be no exaggeration to say that he was, at the time of his untimely passing, one of the best known Hams in Australia as well as in other parts of the world.

Howard Kingley Love was born at St. Kilda (Vic.) on the 9th October, 1895, and received his education at Wesley College, Melbourne. He obtained his Electrical Engineering Diploma in May, 1914. At the outbreak of the First World War in 1914, he joined the A.I.F. and went overseas, at the age of 29 years, with the 6th Battalion. During July, 1916, he was appointed Adjutant of the 2nd Anzac Cavalry Battalion which was commanded by Lieutenant-Colonel C. H. Lor-Evans.

The occasion was some ten days after his appointment to No. 4 Squadron. The unit was flying in formation, bombing and bombing up road formations behind the enemy lines when Howard's machine was struck by enemy fire. He landed on his back and severely wounded. He was taken to a hospital and was unable to return to avoid a shell hole and the craft overturned. Two enormous Germans, armed with rifles and fixed bayonets, arrived nearby on the scene and he was severely beaten. Howard may have had the idea of destroying the "Gamel". He usually raised a good laugh when he completed the telling of the story in his own naive way. "They wanted to take me prisoner and seemed intent on carrying out that idea. Rather than frustrate their intentions, I marched away between them with their bayonets unpleasantly close to my person." Later, the Germans were driven off by the Squadron Headquarters advising that he was safe and sound. After questioning by German intelligence he was liberated as a prisoner-of-war to Carlsruhe and was one of the first batch of P.O.W.s to be released after the Armistice and sailed on the S.S. "Rusa", landing at Adelaide in October, 1918.

It was while in England that Howard met and married Miss M. Pae, returning with her to Australia on the S.S. "Kalmah-Hind." This ship also brought back the rest of the Australian Flying Corps in May, 1919.

His interest in Amateur Radio was intense—"absorbing" probably would be a better word to describe his passion for the sport, and many of the "earlier brigade" will recall his activities on 3GBM Malvern in 1919, later 043BM Malvern and still later (but after a period of inactivity) VK3BM Malvern, Victoria.

Howard Love was the first Federal President of the Wireless Institute of Australia as well as a Foundation Member of that body and was responsible for the organisation of a group of Amateurs in Australia to listen for transmissions from similar groups in U.S.A. and Europe, transmitting on the "short wave length" of 200 metres. History was made in May, 1923, when signals were heard by this group in the first Trans-Pacific Radio Communication.

For many years this enthusiast gave weekly talks on "Wireless" from 3LO, and thus became known to countless people in the city and many of the "earlier brigade" will recall his service was widely appreciated. His lectures to members of the "Radio Club" in the R.O.C. at the Centenary, Chapel Street, Prahran (Vic.) will doubtless be remembered by many present-day Hams with appreciation of their thoroughness.

It was in 1930 that Howard participated in the first Mackay Aerial Expedition to Central Australia as pilot and radio officer and upon his return was instrumental in organising all Radio Amateurs in New South Wales, thus providing an invaluable service during hostilities in the Second World War.

In the following year, 1931, he commenced activities with Fifth 838, Ltd., Melbourne, in the radio receiver manufacturing field, following a period in the timber business in association with his father. It was in this sphere of activity that he was partly responsible for the introduction of the famous "Lafite-White" direct-coupled audio frequency amplifier applied to broadcast receivers—the first commercial "high fidelity" a.f. system.

During 1932, while Howard was manager of Radiovision Australia Ltd., activities in television were conducted, including the broadcast of that company—37B St. Kilda Rd., Melbourne—which was practically identical with that of Kingley Radio Pty. Ltd., which he formed in 1936 and during the following year, after the end of World War 2, commenced the wartime production of Service Communication Equipment.

On 1st May, 1940, at the R.A.F. for active service but his services in that capacity were publicly but firmly declined as he was the manager of a commercial enterprise. The construction of large quantities of service communication equipment.

Many Amateurs of today who have not heard of, or operated, the famous KR11 (ART) communication receiver and transmitter are responsible for the design and manufacture production of some of these outstanding units for supply to the R.A.F., R.A.A.F., Australian Corps of Signals, R.A.N., U.S. Navy, R.I.A.F., U.S. Army, U.S. Marines and the Netherlands East Indies Forces. P.M.G. listening posts also used the ART and latterly, through the courtesy of the R.A.A.F.,

RAY JONES (VK3RU), MANAGER

VDLJG requests that his QTH be published to avoid the large amount of time he has to devote to his administrative duties in regard to 30404A Major John R. Parr, The King's African Rifles, Mogadishu, Somalia, East Africa. He also invites members of the QSL Bureau to send him QSLs via VK3RU and 03030 (After information by courtesy of VK3ADT who mentions that VK3RU and himself have worked ZD60KX on 8.7 on 2800 Kc. during afternoon 29th August).

Attention is directed to the word via DX Contests sponsored by the IARU over the weekend of October 20 and 21st November. The word via is for phone and the latter for c.w. The Contest provides many novel features not previously included.

2014B Mr. Dave Crawford, Box 887, Sekondo, Gold Coast Colony, was previously VK3ALZ and was approached by a fellow amateur, "Amateur Radio" that anyone can spare and race to post him to VK3RU Alex Giddie, 34 Byng Street, Oranvale, N.S.W., who will undertake to forward them on to 2D4JH.

The Hamad section of "Amateur Radio" produces results which are of considerable interest. Mr. who recently patronized that section, requesting a back copy of "A.R." Up to 31st August Bob had already received 21 copies of the required issue. Bob had the misfortune while serving in the A.I.F. to lose all his files of Radio Journals and quite a lot of radio gear while he thought he had left securely locked up to await a return home.

VK3BH Art Wilkey expects to be in Melbourne on holidays in December next and has great hopes of a successful holiday at a remote spot.

At its recent convention the Radio Club Victoria elected VY3AY as its President, while Mr. L.M.R.E. (Maxwell) appointed XEIN to fill a similar office. Both are well known internationally as well as locally.

As reliable and interesting correspondence to Don Trebble, Box 11, Wyndham, again comes forward with an interesting bulletin, it is noted that he has been. Although no listeners' event was staged in the recent B.D. Contest, Edg had staged an officials contest for listening and ended with a station for 226 points using 3.5, 7 and 14 Mc. Mr. has been concentrating his listening of late on 7 Mc. and has so far picked up 176 points. The last being VP3AA, VP3AC, VP3AB, VP3AD, VP3AE, VP3AF, VP3AG, VP3AH, VP3AI, VP3AJ, VP3AK, VP3AL, VP3AM, VP3AN, VP3AO, VP3AP, VP3AQ, VP3AR, VP3AS, VP3AT, VP3AU, VP3AV, VP3AW, VP3AX, VP3AY, VP3AZ, VP3BA, VP3BB, VP3BC, VP3BD, VP3BE, VP3BF, VP3BG, VP3BH, VP3BI, VP3BJ, VP3BK, VP3BL, VP3BM, VP3BN, VP3BO, VP3BP, VP3BQ, VP3BR, VP3BS, VP3BT, VP3BU, VP3BV, VP3BW, VP3BX, VP3BY, VP3BZ, VP3CA, VP3CB, VP3CC, VP3CD, VP3CE, VP3CF, VP3CG, VP3CH, VP3CI, VP3CJ, VP3CK, VP3CL, VP3CM, VP3CN, VP3CO, VP3CP, VP3CQ, VP3CR, VP3CS, VP3CT, VP3CU, VP3CV, VP3CW, VP3CX, VP3CY, VP3CZ, VP3DA, VP3DB, VP3DC, VP3DD, VP3DE, VP3DF, VP3DG, VP3DH, VP3DI, VP3DJ, VP3DK, VP3DL, VP3DM, VP3DN, VP3DO, VP3DP, VP3DQ, VP3DR, VP3DS, VP3DT, VP3DU, VP3DV, VP3DW, VP3DX, VP3DY, VP3DZ, VP3EA, VP3EB, VP3EC, VP3ED, VP3EE, VP3EF, VP3EG, VP3EH, VP3EI, VP3EJ, VP3EK, VP3EL, VP3EM, VP3EN, VP3EO, VP3EP, VP3EQ, VP3ER, VP3ES, VP3ET, VP3EU, VP3EV, VP3EW, VP3EX, VP3EY, VP3EZ, VP3FA, VP3FB, VP3FC, VP3FD, VP3FE, VP3FF, VP3FG, VP3FH, VP3FI, VP3FJ, 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R.F. loss in decibels for 100 ft.

Blue	2.08
Yellow	3.38
Black	2.48
Brown	3.83
White	3.02
Red	2.82
Clear	3.73

Characteristic impedance

Blue	157.5 ohms
Yellow	161
Black	165
Brown	155
White	152
Red	157
Clear	146

Velocity constant

Blue7
Yellow658
Black69
Brown71
White696
Red76
Clear7

All the above figures were measured at a frequency of 45 megacycles per second.

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NEW SOUTH WALES

It has been said that Mr Angus Robertson, Senior Technician of the Department of Civil Aviation, can lecture on any electronic subject at any time, at any place, with the shortest possible notice. He came to us last week for the first time, and was very pleasantly and learnably without notes on "Frequency Modulation" to a record W.I.A. attendance of 120. He was followed by a presentation of the membership of our President Maurice Myers on Friday, 27th August. The rapid attention of his audience paid tribute to the interest he aroused with his lecture, and the rather difficult subject to most of us and proved him to be one of the very best lecturers we have had for some time. At the conclusion of the evening he was asked to answer questions for half an hour and gave further proof of his mastery of the subject.

Among the distinguished visitors was the Federal Secretary Mr. J. H. Macdonald, who presented the program and was asked some many questions about the DX Century Club, interference, contest, etc., that he promised to attend the next meeting for a continuance of the bombardment.

Roaming Sydney recently were 2MX and 8UY from Newcastle and 8WU (ex-GBPD) with Mully and Johnny just arrived from Oland and now settled in Victoria.

NORTH SHORE ZONE

About the most noticeable thing on the Amateur bands over the last months has been the almost total absence of many of the die-hard DX hounds, due mainly, I guess, to the poor conditions that have prevailed. Consequently, my spies have learned that re-building has reached an all-time high in the zone. 2EO is among those busy re-building with the Contest well in mind, and plans to erect no less than three beams. 2AEM also QRT heavily diving into f.m. receiver construction—present project is an 8-tube job with radio detector. 2EA (ex-GBPD) and 2MY are, and is now making a kilometre park nearly on 10,000 Mc—yes, Megacycles! These u.h.f. will ruin you, Ray! 2OR is another inactive ham at the moment, and like many of us, is in the hunt for a permanent location. Recent building keeps him fairly happy just now. 2IT has broken into 14 Mc with a long wire 10 half-wave loops and 12 wires to go into it. 2AKV is also holding down the fort on 14 Mc. DX, 2XI, a newcomer up the line, is very active on 7 Mc. these days.

The Moesian gang seem to have gone overboard for the semi-tuned Colpitts or "Clapp" oscillator in a big way. 2GO and 2TL have rushed them into service, and 2YB is also crystalizing his work in early days. 2AI heard on quite a few occasions of late still with that nice quality phone. 2QG is being listened to with bated breath by quite a few DXers, and it is not surprising the shortage of their receivers. 2GW has reached the profound conclusion that the modern single signal super has some slight advantages over the trusty 2:1. One of course, to post-war advances in the technical field. Well, progress is always with us! 2AHL is another new one at Norbury, heard plugging along on 14 Mc. phone, while 2AIE, also at Norbury, is busy on 7 Mc. phone. 2BO active on 50 Mc. with a 53 feet high 4-element beam pushing his idea through the 2ST local power leaks, sends in a batch of notes about v.h.f. doings up his way. Many thanks Brae, o.b. 2AH now perking on 50 Mc. with 40 watts to an 816, and three beams rotating on the contest—240 Mc and one 14 Mc. 2YM recently acquired a new call, but is not transmitting on the band yet. He is however listening on 7 and 14 Mc. and has a 2YB, but may soon move to 144 Mc. 2ABZ contacts 50 Mc too low in frequency, and has bounced up to 144 Mc. 2XN is also enthusiastically about 50 Mc. but has not heard on yet! He is not 144 Mc. beams because they always point in the wrong direction anyway, even when they're pointing in the right direction!

SOUTH SYDNEY ZONE

No outstanding activities for this month so will commence with a few notes on local activities. 2AB heard working some good DX. 2AD has decided u.h.f. not so good. Interference in single sidedband operation. 2CP has at last sorted his aerial troubles out by pulling all except one down, and is now away again at present time. 2A has a business. 2DU active on 144 Mc. and building new rig for 7 and 14 Mc. 2VA works plenty of DX on 14 Mc. with that beam and excellent location. 2WV just finished building a receiver and transmitter 2WJ busy getting new HRO working. 2ABZ active on all bands between trips overseas as streetcar conductor. 2XN has a new beam. 2YB active on 28 and 50 Mc. with beams on both bands. Plenty of DX. 2ABU heard on 14 Mc. working phone.

WESTERN SUBURBS

Puzzle of the month! How can two well known local stations work a foreign phone station at the

same time, each unknown to the other? Maybe that was how they split the atom! 2AHP is on 14 Mc. and has been contacted on 144 Mc. 2BF is trying to prove Einstein's theory by designing a quadruple conversion superhet. 2AEO is on most bands but very keen on that 288 Mc. stuff. 2AHF has cleared up his "ghost" his v.f.o. now has a nice signal on 14 Mc. 2QG continues to push the ether in the Homebush area plenty DX. 2BA has been heard on 144 Mc. Quesada heard out well on 28 Mc. 2YP is active and thrilled to bits about his new tower and beam. 2AHC clicked for 804 and 835 on 7 Mc. c.w. Heard testing his new phone was 2QZ on 2 Mc. Quesada heard on 14 Mc. were 2CL after DX, 2SA and 2SD hunting well, 2QQ working some good stuff on phone. v.f.o. is on 14 Mc. and has been heard on 144 Mc. 2YD is—oh good! 2ADL comes on actively!

EASTERN SUBURBS ZONE

Activities on the various bands have been rather limited due to sporadic conditions. Quite a few changes are re-building. 2PJ is back on the air after six months spell—completely re-built, 100 watts, class B mod., inductively coupled 500 ohm, active on 14 Mc. phone. 2AIG re-built including new v.f.o. Ray says his v.f.o. is simple and stable. 2MR still building using all new gear. 2WR has heard his QTH, not so good as the old one, still able to work DX. 2EV on 14 Mc. phone, going to try 28 and 50 Mc. Inductively coupled 500 ohm, active on 14 Mc. and contemplates a beam. 2CS active on 14 Mc. and 28 Mc. just finished double conversion switching super. 2AFS not very active, busy with new limiter. 2SA heard using phone with nice quality. 2GP active on 14 Mc. phone. 2ANW active on 7 and 14 Mc. also has a double conversion receiver. 2AJO confirmed c.w. man now on 7 and 14 Mc. phone, Laurie says quite a change. 2CP active on 14 Mc. and 144 Mc.

We have a new station in the Eastern Suburbs, he is known as Happy Harry (a Pirate). He acts self-motivated policeman on the air. He is on QSO to pass an opinion or make a wire crack. We will soon catch up with Harry if his practices continue.

On checking in the call book I find there are over 60 stations licensed in this zone, of these only about half are active, there are however still a few who are working, personally, as ships keep looking for 2AX on 7 and 14 Mc. and pass along the dope on your doings—falling to contact on the air, ring W7058.

COALFIELDS AND LAKES

2AEZ after re-building is getting his share of DX and New South Wales DX. 2AO calling on 144 Mc. heard from Woy Woy, 2GO and 2BU faithful to the v.h.f.s. 2ST using 28 Mc. beam on 144 Mc. worked 2ADX Maitland and 2ADT Cessnock and has been heard in Singleton. 2IE 2J2 ready to go, a real old-timer, has beams on 28 Mc. and possibly 14 Mc. 2ALE a new arrival in Maitland hopes to be on soon, thanks for note. 2KP active on the week-end, every week-days, works 14, 28 and 50 Mc. phone. 2KEZ still needing two States for W.A.S. on 28 Mc. all with a single 80' and two 100' tubes; may at last antenna. 2AHL heard on 28 Mc. 2SP not very active apart from transceiver on 144 Mc. NH from 2MR 2ADT been on holidays. 2IE new DX 100 countries verified now, active on 144 Mc. and still hearing the Blue Mountains gang on that band. 2YL leading quiet life, new receiver, a little tennis and spasms of DX.

NEWCASTLE

2AFS would like the guy using his call sign to please keep within the band. 2PQ has a new shack and is busy installing all the gear and preparing his rotary. 2MS and 2AHL has added the 28 Mc. beam to his rotary on 28 Mc. and could be seen doing aerobics up the top. 2TE is building a new beam using lots of gear, so watch the air currents. 2PT about to build an HRO for the DX season. 2AOY is reported to have a beam at his QTH, what about letting the gang hear it? No news from Maitland what about it!

WESTERN

2ACU still working. DX on 7 Mc. c.w. 2YN has a new microphone, OK on 7 and 14 Mc. DX phone. 2QA with a new v.f.o. and 15 ohm feed line. 2AMR active on most bands. 2XP moving to Coolbarran (Q's secretary's spelling). 2OR migrated to Melbourne for an indefinite period. 2YI working a lot. 2ALN new Ham at Wyalong. 2YV has a new beam. 207 has a new beam. 2XZ in lots of trouble with his modulator. 2ZW has his QRO rig on. 2AIX changed to cathode modulation low trouble. 2XNY phone of new stuff. 2XN prefers c.w. 2YR has built another v.f.o.—couples Colpitts. 2EN new Ham at Bathurst still on c.w. 2YF exclusively on 14 Mc. phone and gets nice DX with a double extended sup. 2YE with the biggest array of all time—four elements wide spaced on 14 Mc, looks like the Harbour Bridge

going around. 2EF still QRL schools. 2HZ built for 288 Mc. but can't hear anything. 2JLZ the reverse, hears everything on 288 Mc. 2LY has a new super modulation transformer, some good phone soon! 2AOK like the Arab is now in Queensland and no a.c.

SOUTH COAST AND TABLELANDS

We extend to 2PA our congrats for a dual band—proud father and highest N.S.W. scorer in the R.D. Contest. Active in this zone on R.D. were 2PA, 2PL, 2Q, 2R, 2S, 2T, 2U, 2V, 2W, 2X, 2Y, 2Z, 2AA, 2AB, 2AC, 2AD, 2AE, 2AF, 2AG, 2AH, 2AI, 2AJ, 2AK, 2AL, 2AM, 2AN, 2AO, 2AP, 2AQ, 2AR, 2AS, 2AT, 2AU, 2AV, 2AW, 2AX, 2AY, 2AZ, 2BA, 2BB, 2BC, 2BD, 2BE, 2BF, 2BG, 2BH, 2BI, 2BJ, 2BK, 2BL, 2BM, 2BN, 2BO, 2BP, 2BQ, 2BR, 2BS, 2BT, 2BU, 2BV, 2BW, 2BX, 2BY, 2BZ, 2CA, 2CB, 2CC, 2CD, 2CE, 2CF, 2CG, 2CH, 2CI, 2CJ, 2CK, 2CL, 2CM, 2CN, 2CO, 2CP, 2CQ, 2CR, 2CS, 2CT, 2CU, 2CV, 2CW, 2CX, 2CY, 2CZ, 2DA, 2DB, 2DC, 2DD, 2DE, 2DF, 2DG, 2DH, 2DI, 2DJ, 2DK, 2DL, 2DM, 2DN, 2DO, 2DP, 2DQ, 2DR, 2DS, 2DT, 2DU, 2DV, 2DW, 2DX, 2DY, 2DZ, 2EA, 2EB, 2EC, 2ED, 2EE, 2EF, 2EG, 2EH, 2EI, 2EJ, 2EK, 2EL, 2EM, 2EN, 2EO, 2EP, 2EQ, 2ER, 2ES, 2ET, 2EU, 2EV, 2EW, 2EX, 2EY, 2EZ, 2FA, 2FB, 2FC, 2FD, 2FE, 2FF, 2FG, 2FH, 2FI, 2FJ, 2FK, 2FL, 2FM, 2FN, 2FO, 2FP, 2FQ, 2FR, 2FS, 2FT, 2FU, 2FV, 2FW, 2FX, 2FY, 2FZ, 2GA, 2GB, 2GC, 2GD, 2GE, 2GF, 2GG, 2GH, 2GI, 2GJ, 2GK, 2GL, 2GM, 2GN, 2GO, 2GP, 2GQ, 2GR, 2GS, 2GT, 2GU, 2GV, 2GW, 2GX, 2GY, 2GZ, 2HA, 2HB, 2HC, 2HD, 2HE, 2HF, 2HG, 2HH, 2HI, 2HJ, 2HK, 2HL, 2HM, 2HN, 2HO, 2HP, 2HQ, 2HR, 2HS, 2HT, 2HU, 2HV, 2HW, 2HX, 2HY, 2HZ, 2IA, 2IB, 2IC, 2ID, 2IE, 2IF, 2IG, 2IH, 2II, 2IJ, 2IK, 2IL, 2IM, 2IN, 2IO, 2IP, 2IQ, 2IR, 2IS, 2IT, 2IU, 2IV, 2IW, 2IX, 2IY, 2IZ, 2JA, 2JB, 2JC, 2JD, 2JE, 2JF, 2JG, 2JH, 2JI, 2JJ, 2JK, 2JL, 2JM, 2JN, 2JO, 2JP, 2JQ, 2JR, 2JS, 2JT, 2JU, 2JV, 2JW, 2JX, 2JY, 2JZ, 2KA, 2KB, 2KC, 2KD, 2KE, 2KF, 2KG, 2KH, 2KI, 2KJ, 2KK, 2KL, 2KM, 2KN, 2KO, 2KP, 2KQ, 2KR, 2KS, 2KT, 2KU, 2KV, 2KW, 2KX, 2KY, 2KZ, 2LA, 2LB, 2LC, 2LD, 2LE, 2LF, 2LG, 2LH, 2LI, 2LJ, 2LK, 2LL, 2LM, 2LN, 2LO, 2LP, 2LQ, 2LR, 2LS, 2LT, 2LU, 2LV, 2LW, 2LX, 2LY, 2LZ, 2MA, 2MB, 2MC, 2MD, 2ME, 2MF, 2MG, 2MH, 2MI, 2MJ, 2MK, 2ML, 2MN, 2MO, 2MP, 2MQ, 2MR, 2MS, 2MT, 2MU, 2MV, 2MW, 2MX, 2MY, 2MZ, 2NA, 2NB, 2NC, 2ND, 2NE, 2NF, 2NG, 2NH, 2NI, 2NJ, 2NK, 2NL, 2NM, 2NO, 2NP, 2NQ, 2NR, 2NS, 2NT, 2NU, 2NV, 2NW, 2NX, 2NY, 2NZ, 2OA, 2OB, 2OC, 2OD, 2OE, 2OF, 2OG, 2OH, 2OI, 2OJ, 2OK, 2OL, 2OM, 2ON, 2OO, 2OP, 2OQ, 2OR, 2OS, 2OT, 2OU, 2OV, 2OW, 2OX, 2OY, 2OZ, 2PA, 2PB, 2PC, 2PD, 2PE, 2PF, 2PG, 2PH, 2PI, 2PJ, 2PK, 2PL, 2PM, 2PN, 2PO, 2PP, 2PQ, 2PR, 2PS, 2PT, 2PU, 2PV, 2PW, 2PX, 2PY, 2PZ, 2QA, 2QB, 2QC, 2QD, 2QE, 2QF, 2QG, 2QH, 2QI, 2QJ, 2QK, 2QL, 2QM, 2QN, 2QO, 2QP, 2QQ, 2QR, 2QS, 2QT, 2QU, 2QV, 2QW, 2QX, 2QY, 2QZ, 2RA, 2RB, 2RC, 2RD, 2RE, 2RF, 2RG, 2RH, 2RI, 2RJ, 2RK, 2RL, 2RM, 2RN, 2RO, 2RP, 2RQ, 2RR, 2RS, 2RT, 2RU, 2RV, 2RW, 2RX, 2RY, 2RZ, 2SA, 2SB, 2SC, 2SD, 2SE, 2SF, 2SG, 2SH, 2SI, 2SJ, 2SK, 2SL, 2SM, 2SN, 2SO, 2SP, 2SQ, 2SR, 2SS, 2ST, 2SU, 2SV, 2SW, 2SX, 2SY, 2SZ, 2TA, 2TB, 2TC, 2TD, 2TE, 2TF, 2TG, 2TH, 2TI, 2TJ, 2TK, 2TL, 2TM, 2TN, 2TO, 2TP, 2TQ, 2TR, 2TS, 2TT, 2TU, 2TV, 2TW, 2TX, 2TY, 2TZ, 2UA, 2UB, 2UC, 2UD, 2UE, 2UF, 2UG, 2UH, 2UI, 2UJ, 2UK, 2UL, 2UM, 2UN, 2UO, 2UP, 2UQ, 2UR, 2US, 2UT, 2UU, 2UV, 2UW, 2UX, 2UY, 2UZ, 2VA, 2VB, 2VC, 2VD, 2VE, 2VF, 2VG, 2VH, 2VI, 2VJ, 2VK, 2VL, 2VM, 2VN, 2VO, 2VP, 2VQ, 2VR, 2VS, 2VT, 2VU, 2VV, 2VW, 2VX, 2VY, 2VZ, 2WA, 2WB, 2WC, 2WD, 2WE, 2WF, 2WG, 2WH, 2WI, 2WJ, 2WK, 2WL, 2WM, 2WN, 2WO, 2WP, 2WQ, 2WR, 2WS, 2WT, 2WU, 2WV, 2WW, 2WX, 2WY, 2WZ, 2XA, 2XB, 2XC, 2XD, 2XE, 2XF, 2XG, 2XH, 2XI, 2XJ, 2XK, 2XL, 2XM, 2XN, 2XO, 2XP, 2XQ, 2XR, 2XS, 2XT, 2XU, 2XV, 2XW, 2XX, 2XY, 2XZ, 2YA, 2YB, 2YC, 2YD, 2YE, 2YF, 2YG, 2YH, 2YI, 2YJ, 2YK, 2YL, 2YM, 2YN, 2YO, 2YP, 2YQ, 2YR, 2YS, 2YT, 2YU, 2YV, 2YW, 2YX, 2YY, 2YZ, 2ZA, 2ZB, 2ZC, 2ZD, 2ZE, 2ZF, 2ZG, 2ZH, 2ZI, 2ZJ, 2ZK, 2ZL, 2ZM, 2ZN, 2ZO, 2ZP, 2ZQ, 2ZR, 2ZS, 2ZT, 2ZU, 2ZV, 2ZW, 2ZX, 2ZY, 2ZZ, 2AA, 2AB, 2AC, 2AD, 2AE, 2AF, 2AG, 2AH, 2AI, 2AJ, 2AK, 2AL, 2AM, 2AN, 2AO, 2AP, 2AQ, 2AR, 2AS, 2AT, 2AU, 2AV, 2AW, 2AX, 2AY, 2AZ, 2BA, 2BB, 2BC, 2BD, 2BE, 2BF, 2BG, 2BH, 2BI, 2BJ, 2BK, 2BL, 2BM, 2BN, 2BO, 2BP, 2BQ, 2BR, 2BS, 2BT, 2BU, 2BV, 2BW, 2BX, 2BY, 2BZ, 2CA, 2CB, 2CC, 2CD, 2CE, 2CF, 2CG, 2CH, 2CI, 2CJ, 2CK, 2CL, 2CM, 2CN, 2CO, 2CP, 2CQ, 2CR, 2CS, 2CT, 2CU, 2CV, 2CW, 2CX, 2CY, 2CZ, 2DA, 2DB, 2DC, 2DD, 2DE, 2DF, 2DG, 2DH, 2DI, 2DJ, 2DK, 2DL, 2DM, 2DN, 2DO, 2DP, 2DQ, 2DR, 2DS, 2DT, 2DU, 2DV, 2DW, 2DX, 2DY, 2DZ, 2EA, 2EB, 2EC, 2ED, 2EE, 2EF, 2EG, 2EH, 2EI, 2EJ, 2EK, 2EL, 2EM, 2EN, 2EO, 2EP, 2EQ, 2ER, 2ES, 2ET, 2EU, 2EV, 2EW, 2EX, 2EY, 2EZ, 2FA, 2FB, 2FC, 2FD, 2FE, 2FF, 2FG, 2FH, 2FI, 2FJ, 2FK, 2FL, 2FM, 2FN, 2FO, 2FP, 2FQ, 2FR, 2FS, 2FT, 2FU, 2FV, 2FW, 2FX, 2FY, 2FZ, 2GA, 2GB, 2GC, 2GD, 2GE, 2GF, 2GG, 2GH, 2GI, 2GJ, 2GK, 2GL, 2GM, 2GN, 2GO, 2GP, 2GQ, 2GR, 2GS, 2GT, 2GU, 2GV, 2GW, 2GX, 2GY, 2GZ, 2HA, 2HB, 2HC, 2HD, 2HE, 2HF, 2HG, 2HH, 2HI, 2HJ, 2HK, 2HL, 2HM, 2HN, 2HO, 2HP, 2HQ, 2HR, 2HS, 2HT, 2HU, 2HV, 2HW, 2HX, 2HY, 2HZ, 2IA, 2IB, 2IC, 2ID, 2IE, 2IF, 2IG, 2IH, 2II, 2IJ, 2IK, 2IL, 2IM, 2IN, 2IO, 2IP, 2IQ, 2IR, 2IS, 2IT, 2IU, 2IV, 2IW, 2IX, 2IY, 2IZ, 2JA, 2JB, 2JC, 2JD, 2JE, 2JF, 2JG, 2JH, 2JI, 2JJ, 2JK, 2JL, 2JM, 2JN, 2JO, 2JP, 2JQ, 2JR, 2JS, 2JT, 2JU, 2JV, 2JW, 2JX, 2JY, 2JZ, 2KA, 2KB, 2KC, 2KD, 2KE, 2KF, 2KG, 2KH, 2KI, 2KJ, 2KK, 2KL, 2KM, 2KN, 2KO, 2KP, 2KQ, 2KR, 2KS, 2KT, 2KU, 2KV, 2KW, 2KX, 2KY, 2KZ, 2LA, 2LB, 2LC, 2LD, 2LE, 2LF, 2LG, 2LH, 2LI, 2LJ, 2LK, 2LM, 2LN, 2LO, 2LP, 2LQ, 2LR, 2LS, 2LT, 2LU, 2LV, 2LW, 2LX, 2LY, 2LZ, 2MA, 2MB, 2MC, 2MD, 2ME, 2MF, 2MG, 2MH, 2MI, 2MJ, 2MK, 2ML, 2MN, 2MO, 2MP, 2MQ, 2MR, 2MS, 2MT, 2MU, 2MV, 2MW, 2MX, 2MY, 2MZ, 2NA, 2NB, 2NC, 2ND, 2NE, 2NF, 2NG, 2NH, 2NI, 2NJ, 2NK, 2NL, 2NM, 2NO, 2NP, 2NQ, 2NR, 2NS, 2NT, 2NU, 2NV, 2NW, 2NX, 2NY, 2NZ, 2OA, 2OB, 2OC, 2OD, 2OE, 2OF, 2OG, 2OH, 2OI, 2OJ, 2OK, 2OL, 2OM, 2ON, 2OO, 2OP, 2OQ, 2OR, 2OS, 2OT, 2OU, 2OV, 2OW, 2OX, 2OY, 2OZ, 2PA, 2PB, 2PC, 2PD, 2PE, 2PF, 2PG, 2PH, 2PI, 2PJ, 2PK, 2PL, 2PM, 2PN, 2PO, 2PP, 2PQ, 2PR, 2PS, 2PT, 2PU, 2PV, 2PW, 2PX, 2PY, 2PZ, 2QA, 2QB, 2QC, 2QD, 2QE, 2QF, 2QG, 2QH, 2QI, 2QJ, 2QK, 2QL, 2QM, 2QN, 2QO, 2QP, 2QQ, 2QR, 2QS, 2QT, 2QU, 2QV, 2QW, 2QX, 2QY, 2QZ, 2RA, 2RB, 2RC, 2RD, 2RE, 2RF, 2RG, 2RH, 2RI, 2RJ, 2RK, 2RL, 2RM, 2RN, 2RO, 2RP, 2RQ, 2RR, 2RS, 2RT, 2RU, 2RV, 2RW, 2RX, 2RY, 2RZ, 2SA, 2SB, 2SC, 2SD, 2SE, 2SF, 2SG, 2SH, 2SI, 2SJ, 2SK, 2SL, 2SM, 2SN, 2SO, 2SP, 2SQ, 2SR, 2SS, 2ST, 2SU, 2SV, 2SW, 2SX, 2SY, 2SZ, 2TA, 2TB, 2TC, 2TD, 2TE, 2TF, 2TG, 2TH, 2TI, 2TJ, 2TK, 2TL, 2TM, 2TN, 2TO, 2TP, 2TQ, 2TR, 2TS, 2TT, 2TU, 2TV, 2TW, 2TX, 2TY, 2TZ, 2UA, 2UB, 2UC, 2UD, 2UE, 2UF, 2UG, 2UH, 2UI, 2UJ, 2UK, 2UL, 2UM, 2UN, 2UO, 2UP, 2UQ, 2UR, 2US, 2UT, 2UU, 2UV, 2UW, 2UX, 2UY, 2UZ, 2VA, 2VB, 2VC, 2VD, 2VE, 2VF, 2VG, 2VH, 2VI, 2VJ, 2VK, 2VL, 2VM, 2VN, 2VO, 2VP, 2VQ, 2VR, 2VS, 2VT, 2VU, 2VV, 2VW, 2VX, 2VY, 2VZ, 2WA, 2WB, 2WC, 2WD, 2WE, 2WF, 2WG, 2WH, 2WI, 2WJ, 2WK, 2WL, 2WM, 2WN, 2WO, 2WP, 2WQ, 2WR, 2WS, 2WT, 2WU, 2WV, 2WW, 2WX, 2WY, 2WZ, 2XA, 2XB, 2XC, 2XD, 2XE, 2XF, 2XG, 2XH, 2XI, 2XJ, 2XK, 2XL, 2XM, 2XN, 2XO, 2XP, 2XQ, 2XR, 2XS, 2XT, 2XU, 2XV, 2XW, 2XX, 2XY, 2XZ, 2YA, 2YB, 2YC, 2YD, 2YE, 2YF, 2YG, 2YH, 2YI, 2YJ, 2YK, 2YL, 2YM, 2YN, 2YO, 2YP, 2YQ, 2YR, 2YS, 2YT, 2YU, 2YV, 2YW, 2YX, 2YY, 2YZ, 2ZA, 2ZB, 2ZC, 2ZD, 2ZE, 2ZF, 2ZG, 2ZH, 2ZI, 2ZJ, 2ZK, 2ZL, 2ZM, 2ZN, 2ZO, 2ZP, 2ZQ, 2ZR, 2ZS, 2ZT, 2ZU, 2ZV, 2ZW, 2ZX, 2ZY, 2ZZ, 2AA, 2AB, 2AC, 2AD, 2AE, 2AF, 2AG, 2AH, 2AI, 2AJ, 2AK, 2AL, 2AM, 2AN, 2AO, 2AP, 2AQ, 2AR, 2AS, 2AT, 2AU, 2AV, 2AW, 2AX, 2AY, 2AZ, 2BA, 2BB, 2BC, 2BD, 2BE, 2BF, 2BG, 2BH, 2BI, 2BJ, 2BK, 2BL, 2BM, 2BN, 2BO, 2BP, 2BQ, 2BR, 2BS, 2BT, 2BU, 2BV, 2BW, 2BX, 2BY, 2BZ, 2CA, 2CB, 2CC, 2CD, 2CE, 2CF, 2CG, 2CH, 2CI, 2CJ, 2CK, 2CL, 2CM, 2CN, 2CO, 2CP, 2CQ, 2CR, 2CS, 2CT, 2CU, 2CV, 2CW, 2CX, 2CY, 2CZ, 2DA, 2DB, 2DC, 2DD, 2DE, 2DF, 2DG, 2DH, 2DI, 2DJ, 2DK, 2DL, 2DM, 2DN, 2DO, 2DP, 2DQ, 2DR, 2DS, 2DT, 2DU, 2DV, 2DW, 2DX, 2DY, 2DZ, 2EA, 2EB, 2EC, 2ED, 2EE, 2EF, 2EG, 2EH, 2EI, 2EJ, 2EK, 2EL, 2EM, 2EN, 2EO, 2EP, 2EQ, 2ER, 2ES, 2ET, 2EU, 2EV, 2EW, 2EX, 2EY, 2EZ, 2FA, 2FB, 2FC, 2FD, 2FE, 2FF, 2FG, 2FH, 2FI, 2FJ, 2FK, 2FL, 2FM, 2FN, 2FO, 2FP, 2FQ, 2FR, 2FS, 2FT, 2FU, 2FV, 2FW, 2FX, 2FY, 2FZ, 2GA, 2GB, 2GC, 2GD, 2GE, 2GF, 2GG, 2GH, 2GI, 2GJ, 2GK, 2GL, 2GM, 2GN, 2GO, 2GP, 2GQ, 2GR, 2GS, 2GT, 2GU, 2GV, 2GW, 2GX, 2GY, 2GZ, 2HA, 2HB, 2HC, 2HD, 2HE, 2HF, 2HG, 2HH, 2HI, 2HJ, 2HK, 2HL, 2HM, 2HN, 2HO, 2HP, 2HQ, 2HR, 2HS, 2HT, 2HU, 2HV, 2HW, 2HX, 2HY, 2HZ, 2IA, 2IB, 2IC, 2ID, 2IE, 2IF, 2IG, 2IH, 2II, 2IJ, 2IK, 2IL, 2IM, 2IN, 2IO, 2IP, 2IQ, 2IR, 2IS, 2IT, 2IU, 2IV, 2IW, 2IX, 2IY, 2IZ, 2JA, 2JB, 2JC, 2JD, 2JE, 2JF, 2JG, 2JH, 2JI, 2JJ, 2JK, 2JL, 2JM, 2JN, 2JO, 2JP, 2JQ, 2JR, 2JS, 2JT, 2JU, 2JV, 2JW, 2JX, 2JY, 2JZ, 2KA, 2KB, 2KC, 2KD, 2KE, 2KF, 2KG, 2KH, 2KI, 2KJ, 2KK, 2KL, 2KM, 2KN, 2KO, 2KP, 2KQ, 2KR, 2KS, 2KT, 2KU, 2KV, 2KW, 2KX, 2KY, 2KZ, 2LA, 2LB, 2LC, 2LD, 2LE, 2LF, 2LG, 2LH, 2LI, 2LJ, 2LK, 2LM, 2LN, 2LO, 2LP, 2LQ, 2LR, 2LS, 2LT, 2LU, 2LV, 2LW, 2LX, 2LY, 2LZ, 2MA, 2MB, 2MC, 2MD, 2ME, 2MF, 2MG, 2MH, 2MI, 2MJ, 2MK, 2ML, 2MN, 2MO, 2MP, 2MQ, 2MR, 2MS, 2MT, 2MU, 2MV, 2MW, 2MX, 2MY, 2MZ, 2NA, 2NB, 2NC, 2ND, 2NE, 2NF, 2NG, 2NH, 2NI, 2NJ, 2NK, 2NL, 2NM, 2NO, 2NP, 2NQ, 2NR, 2NS, 2NT, 2NU, 2NV, 2NW, 2NX, 2NY, 2NZ, 2OA, 2OB, 2OC, 2OD, 2OE, 2OF, 2OG, 2OH, 2OI, 2OJ, 2OK, 2OL, 2OM, 2ON, 2OO, 2OP, 2OQ, 2OR, 2OS, 2OT, 2OU, 2OV, 2OW, 2OX, 2OY, 2OZ, 2PA, 2PB, 2PC, 2PD, 2PE, 2PF, 2PG, 2PH, 2PI, 2PJ, 2PK, 2PL, 2PM, 2PN, 2PO, 2PP, 2PQ, 2PR, 2PS, 2PT, 2PU, 2PV, 2PW, 2PX, 2PY, 2PZ, 2QA, 2QB, 2QC, 2QD, 2QE, 2QF, 2QG, 2QH, 2QI, 2QJ, 2QK, 2QL, 2QM, 2QN, 2QO, 2QP, 2QQ, 2QR, 2QS, 2QT, 2QU, 2QV, 2QW, 2QX, 2QY, 2QZ, 2RA, 2RB, 2RC, 2RD, 2RE, 2RF, 2RG, 2RH, 2RI, 2RJ, 2RK, 2RL, 2RM, 2RN, 2RO, 2RP, 2RQ, 2RR, 2RS, 2RT, 2RU, 2RV, 2RW, 2RX, 2RY, 2RZ, 2SA, 2SB, 2SC, 2SD, 2SE, 2SF, 2SG, 2SH, 2SI, 2SJ, 2SK, 2SL, 2SM, 2SN, 2SO, 2SP, 2SQ, 2SR, 2SS, 2ST, 2SU, 2SV, 2SW, 2SX, 2SY, 2SZ, 2TA, 2TB, 2TC, 2TD, 2TE, 2TF, 2TG, 2TH, 2TI, 2TJ, 2TK, 2TL, 2TM, 2TN, 2TO, 2TP, 2TQ, 2TR, 2TS, 2TT, 2TU, 2TV, 2TW, 2TX, 2TY, 2TZ, 2UA, 2UB, 2UC, 2UD, 2UE, 2UF, 2UG, 2UH, 2UI, 2UJ, 2UK, 2UL, 2UM, 2UN, 2UO, 2UP, 2UQ, 2UR, 2US, 2UT, 2UU, 2UV, 2UW, 2UX, 2UY, 2UZ, 2VA, 2VB, 2VC, 2VD, 2VE, 2VF, 2VG, 2VH, 2VI, 2VJ, 2VK, 2VL, 2VM, 2VN, 2VO, 2VP, 2VQ, 2VR, 2VS, 2VT, 2VU, 2VV, 2VW, 2VX, 2VY, 2VZ, 2WA, 2WB, 2WC, 2WD, 2WE, 2WF, 2WG, 2WH, 2WI, 2WJ, 2WK, 2WL, 2WM, 2WN, 2WO, 2WP, 2WQ, 2WR, 2WS, 2WT, 2WU, 2WV, 2WW, 2WX, 2WY, 2WZ, 2XA, 2XB, 2XC, 2XD, 2XE, 2XF, 2XG, 2XH, 2XI, 2XJ, 2XK, 2XL, 2XM, 2XN, 2XO, 2XP, 2XQ, 2XR, 2XS, 2XT, 2XU, 2XV, 2XW, 2XX, 2XY, 2XZ, 2YA, 2YB, 2YC, 2YD, 2YE, 2YF, 2YG, 2YH, 2YI, 2YJ, 2YK, 2YL, 2YM, 2YN, 2YO, 2YP, 2YQ, 2YR, 2YS, 2YT, 2YU, 2YV, 2YW, 2YX, 2YY, 2YZ, 2ZA, 2ZB, 2ZC, 2ZD, 2ZE, 2ZF, 2ZG, 2ZH, 2ZI, 2ZJ, 2ZK, 2ZL, 2ZM, 2ZN, 2ZO, 2ZP, 2ZQ, 2ZR, 2ZS, 2ZT, 2ZU, 2ZV, 2ZW, 2ZX, 2ZY, 2ZZ, 2AA, 2AB, 2AC, 2AD, 2AE, 2AF, 2AG, 2AH, 2AI, 2AJ, 2AK, 2AL, 2AM, 2AN, 2AO, 2AP, 2AQ, 2AR, 2AS, 2AT, 2AU, 2AV, 2AW, 2AX, 2AY, 2AZ, 2BA, 2BB, 2BC, 2BD, 2BE, 2BF, 2BG, 2BH, 2BI, 2BJ, 2BK, 2BL, 2BM, 2BN, 2BO, 2BP, 2BQ, 2BR, 2BS, 2BT, 2BU, 2BV, 2BW, 2BX, 2BY, 2BZ, 2CA, 2CB, 2CC

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No worries about local QRM in Albany as the song are not active. With the approach of winter, the feather three should be a move from Brown to 3-shacks. 2EL has a new six foot rack to take the entire rig. 2YK sailed on the "Stratford" for London, the YL soon to become an XYL. 2QJ moderately active on 14, 7 and 8.5 Mc. found it harder to get the final on 8.5 than 28 Mc. 2ANQ, 2QD and 2QE also 2JA all re-building, how about some news from Wagon?

240K very active from Muswellbrook, although has had the call for years it is the first time enough space has been available for the rig to happen to grid on 8.8 Mc before the summer seems to be great inactivity on the rag-chewing bands of the Limerick, Grafton and Muswellbrook gang, possibly due to re-organisation after the flood. DX has been heard calling 2NY on 26 Mc, however 20K at 14, and 7 Mc with only a few watts. 22K at 2.24MS running 30 Mc. tests after a lot of delays in a time

harmonic used on air on five, is making a record for just a little more direct. **33N** home for the first time in a while, comes out on 10 and 11.7 Mc., second owner of a new **B40** receiver. **Flamco** hit commercial radio with a talk on QRP. **Club** active on 7 Mc. with **QRP**. **33A** has a nice rig under way. **1C** with **QRP** to **QRO** to **QRP** to **QRP** (pre-1935 **50P**) running a few watts on an **807** Hartley. **32H** may be moving shortly to Rockhampton, he is with Aeradio. **33K** has a nice signal on 7 Mc. with sound. **33L** has a nice signal on 7 Mc. main gear. **33M** ready for **33M** plan a rotary, **33N** recuperating from his R.D. Contest efforts. **1WC** (**33W**) working 14 Mc. only, hopes to be into a new time shortly and will set up all the gear. **33X** the best. **33Y** occasionally to keep in touch with the local.

Conditions on 14 Me. for the month of August have been fairly poor, with the result that there is not much to report in the way of DX. The magnetic disturbance during the week-end 7-8th had a marked effect on conditions and I am inclined to think present conditions are the after math, fade-outs being numerous.

2HEZ had the good fortune to pull off two really good ones in PDXN Netherlands. West India approach. 2HEZ was the only one to be successful. 2HEZ was 11:05 KQ. TP around 1730 hrs. 4VN worked the PDXN the night prior to 2HEZ. Although 4VN does not get on very much these days. 4VN seems to be there when he's coming thru. 4VN is very for Marr. 4VN is in the Tuxedo. 4VN is in the KQ. 2HEZ had received his W.A.Z. certificate (the first in VN) I believe--congratulations Gordon. I suppose your DXing days are over now--are they? I have been convinced that you are a very good operator. I hope you and your wife and 2HEZ are happy. The couple are very good. The 2D was on an 57 hr calling CQ and although called by a few of us (including the 4V gang) he was not heard again.

SE0 has been heard on from time to time working the good ones. Not so active these days, he is probably resting for the VK2L Contest. He's a top country list now Dave! I believe you've worked 146 countries. QSL is still taking his share of QRM from the electric trains and overhead trolley, although I still message him now and then. He's got Ed, Ed, Ed, but two really good ones—F2B4B and ZP33L for 187. He is also W.A.Z.—his last station on the air was 404YX.

QSL cards for FRSCE and FAGXP are being returned via the D.L.O. which doesn't look too good especially for those who have not worked either FOSAA or RV2/FOX. Has anyone any news of MP4BAB 14050 Kc. around 2800 kHz? 8Di tells me that the R.S.C.B. mention an MPZ prefix for a station located at Dukan in Qatar, which is somewhere around the Persian Gulf.

have the following: Trieste—DRC, HNZ (c.w.), HBCB (c.w.), and MP21A (usually on the high end of 14 Mc. phone); on Sardinia—181EH (phone), 1011HK (c.w. and phone), and 11AEW (c.w.).

The pick of the DK during the month of August appears to be AC4N 14129-14130 Kc. around 2000 hrs. CT3AA and CT3AB v.l.o. around 2000 hrs. PZ1BW 2000 hrs. ZP3AW 14100 Kc. 9130 Kc. - PZ3BL 14050 Kc. approx. 1700 hrs. W8EWA TR1K has been on a couple of nights but is not as active as he was a few months ago. HP1ER (ex-HP4Q when he was under cover) was there one Sunday helping a few out with a new one, including myself.

Q. Q. cards from TQAR (now YKOR) on Chagoss have arrived for contacts dating back to early 1947. Is a QSO with YKOR a week ago he mentioned that he does QST 100 per cent, but as he can only hear his cards TWICE in every year (the local club calls twice a year) he asks that you have a look and let him know how to turn up. I assume that he would like to extract a card out of the QV group of 'LAIKES' and 'LAIKED in Zone 40? A card from Zone 40 is wanted here for the W.A.Z. credit.

That's the score for this month fellows. Please let me have your home and country scores—also any US news you have. Make sure it reaches me by the 5th of the month, so that I can catch the following month's issue. QTH 12 Schackel Ave., Kingsgrove, N.S.W.

Congratulations to Doug Norman VRSIC who has won an Architectural scholarship which enables him to study in England. He expects to leave for England in December and is most anxious to contact you at times on the London area. If you can help him his address is 10 Brighton Avenue, Preston, Victoria.

The Council of the Victorian Division of the WIA have decided that Standard Frequency Transmissions from VK3WI will take place every three months. The next transmission will be on the 26th October on the 7 Mc. band. Spot frequencies will be given every 10 Kc. from 7000 to 7300 Kc.

The Convention of the North Western Zone was unique in many respects. For a start it was held at a private home out in the country and not in a town. It was the reason for a the QWV day of roads on 2.5 Mc. for the preceding week or so. There seemed to be many roads leading to 3RM and all the clusters and best according to their

advocates. However there was one thing that all agreed on, that was that when within a few miles of 33B1 his sticks would be clearly visible and that there would be no mistaking his farm. I am sure that this was the unique for the catting. All of which was done by the wing of local Hams. None of us had eaten so many consecutive meals of turkey before and as for truffles and cakers, seemed to be used no despite the greatest attacks made on them. It is usual for Hams to exercise their jaws at Conventions but not in the manner that they were used at 33B1's.

On Saturday morning cars from as far away as Seymour, Warrnambool and Melbourne were heading for Queenscliff. BIG, who had JJA with him, collected BIL (your son) and we made Stawell for lunch seeing SVW there just as he was taking off in his white coat and shutting up shop. He directed us to the cars and put us on the right road from Queenscliff.

Following Bruce's instructions to "reads" we crossed the railway round the dam and admired a "sugar gun" which are all that are left of the school that Bruce first went to, and then we saw the "old" station, which is the old station of the old station. WYBMS is to the usual Main Station, so far as aerials go. Any of the attacks landing up the ends of the Vee beams would do me for a mast and I have a record of the first of the central mast with the seven beams being the first of the mast. The giant's umbrella that has lost its cover. While the leads from the beams to the shack are like the telephone wires on a main road, and seem to be in a similar manner. But I am getting ahead of myself.

[illegible]

Bruce later asked us to collect our gear and allotted us to our quarters by the effective way of opening the door and leaving it to us to settle who went where. Any riot or ill feeling amongst con-

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sements for the best position was quelled by the dinner bell, and it was a case of Ham to Ham and Turkey. This was the first of four such sessions and I think the longest, but, after a time the time man could not take it. Bruce then gave a talk on Yee beams which was most interesting. He remarked that when they were as long as his were 860 ft. they were very easy to tune over the band. They were not bi directional, as shorter beams are. However he had also noted that with his array they were not as directional in reception as in transmission when he began with fewer. He thought that this was due to the leads acting as a receiving aerial. He stressed that it was when conditions were bad that Yee beams came into their own and that he would be able to get through when no other station could.

The zone then held their formal business session when it was apparent that there were only thirteen members with some associates. A truly remarkable meeting for such a small band to set in motion.

OTL then announced the conditions of what he called a "Buccy" Auction of some kind and gear initiated by members of the Zone for the "Food for Britain" Appeal. The terms of sale were very novel and contrived so that they generally favoured the seller. They were couched in legal terms with as many wherea's and aforesaid's as there are 73s in a phone dial. The main idea being to incite bidders to make the other fellow pay for it. This proceeded to the tune of about £30 for two sales.

There was in all 27 Hams present, and including the YVLA YLA and Junior Ops, a total of 43 was present 20 of whom slept overnight.

From the session during the zone meeting the following points were noted:—(1) Congratulations to RML on his re-election as President and expression of regret that he was unable to be present at the Convention. (2) It was suggested that the Standard Frequency Transmissions be made only quarterly and to receive publicity beforehand. (3) Favourable comments on the improvement in the magazine.

(4) Concern was expressed at the loss of the emergency frequencies. (5) The speech quality of VRSW received considerable criticism. (6) The Proposals Committee were congratulated on their efforts. (7) It was suggested that more effective notices be made at the instrument and book fairs. (8) There was a long and warm discussion on the QRP distribution in which the general opinion was that cards should be forwarded to members as had been done in the past; although it was considered that bundles of cards for distribution could be sent to one person in a centre to distribute without further re-posting.

The election of zone officers resulted: President OTL (a key station), Secretary and Treasurer SOA, Communications Officer and News Correspondent and Dispatch Officer SBM.

Sunday morning was mostly taken up in general chitchew, meeting voices in person and watching Treb's landmark new camera. Amongst the first of whom were BYW and STA in a push new car. Then as many as could gathered into the shack to hear the WJLA broadcast and/or to eat oranges that were placed in a cask near the door. In the afternoon SARG gave a talk on GO MR.

Bruce and the Hams, in cars, to have a look round the farm. He showed us the place where he first camped when he first took up land, the Mallee and where they have left the original trees growing. He also showed us the private canal over 9 miles long down which he pumps water to irrigate fallow. This is a practice very little known. Also a crop of wheat growing on land that he had watered last year, sometimes getting bogged in his car while attending the pump.

The success of the Convention was no doubt due to Station SBM which was of interest to us all, but it was the work done by Mrs. Trebble, Mrs. Adams, Mrs. Mann and her mother that made me be all so sorry to leave and to hope that it will not be long to the next time.

OTA's 80 footer blew down in the gale. Treb intends to re-erect it after giving it a coat of paint. RJO, although active on 7 and 14 Mc, cannot be persuaded to join the hook-up on 3.5 Mc. RCD still have the s.d. power lines very soon and then expects to get on the air. SZE had an f.b. rig put away, so judging by reports of the boat outfit that he's nearly completed, he should go to town when he starts up. SCE is branching out with an ARS, new modulator and new mikes. SOA has put his gear on a dinner wagon and moved in by the bridge. Jan is also building 50 Mc. gear and a 4 element rotary beam.

ROH is heard more often, now on 7.5 and 7 Mc. and a Command Transmitter, v.f.o. and final, and is doing a lot of looking at and thinking about an SCR252. SAGE is active rag-chewing and never out of something to say. SHR is off the air owing to burnt out alternator and is so QRL he is told that he hasn't got round to rewinding it yet. SML



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Doctor and Saint, and heard great Agnostics
About it and about, but evermore
To the sacred Fane of Holy Water!"

The meeting closed with an invective lecture by
44W on "Lecher Wire and the Application Tareed"

Certificates were received for the following:
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44L, 44M, 44N, 44O, 44P, 44Q, 44R, 44S, 44T, 44U, 44V,
44W, 44X, 44Y, 44Z, 44AA, 44AB, 44AC, 44AD, 44AE,
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44CG, 44CH, 44CI, 44CJ, 44CK, 44CL, 44CM,
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44CU, 44CV, 44CW, 44CX, 44CY, 44CZ, 44DA,
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44OV, 44OW, 44OX, 44OY, 44OZ, 44PA, 44PB,
44PC, 44PD, 44PE, 44PF, 44PG, 44PH, 44PI,
44PJ, 44PK, 44PL, 44PM, 44PN, 44PO, 44PP,
44PQ, 44PR, 44PS, 44PT, 44PU, 44PV, 44PW,
44PX, 44PY, 44PZ, 44QA, 44QB, 44QC, 44QD,
44QE, 44QF, 44QG, 44QH, 44QI, 44QJ, 44QK,
44QL, 44QM, 44QN, 44QO, 44QP, 44QQ, 44QR,
44QS, 44QT, 44QU, 44QV, 44QW, 44QX, 44QY,
44QZ, 44RA, 44RB, 44RC, 44RD, 44RE, 44RF,
44RG, 44RH, 44RI, 44RJ, 44RK, 44RL, 44RM,
44RN, 44RO, 44RP, 44RQ, 44RR, 44RS, 44RT,
44RU, 44RV, 44RW, 44RX, 44RY, 44RZ, 44SA,
44SB, 44SC, 44SD, 44SE, 44SF, 44SG, 44SH,
44SI, 44SJ, 44SK, 44SL, 44SM, 44SN, 44SO,
44SP, 44SQ, 44SR, 44SS, 44ST, 44SU, 44SV,
44SW, 44SX, 44SY, 44SZ, 44TA, 44TB, 44TC,
44TD, 44TE, 44TF, 44TG, 44TH, 44TI, 44TJ,
44TK, 44TL, 44TM, 44TN, 44TO, 44TP, 44TQ,
44TR, 44TS, 44TT, 44TU, 44TV, 44TW, 44TX,
44TY, 44TZ, 44UA, 44UB, 44UC, 44UD, 44UE,
44UF, 44UG, 44UH, 44UI, 44UJ, 44UK, 44UL,
44UM, 44UN, 44UO, 44UP, 44UQ, 44UR, 44US,
44UT, 44UU, 44UV, 44UW, 44UX, 44UY, 44UZ,
44VA, 44VB, 44VC, 44VD, 44VE, 44VF, 44VG,
44VH, 44VI, 44VJ, 44VK, 44VL, 44VM, 44VN,
44VO, 44VP, 44VQ, 44VR, 44VS, 44VT, 44VU,
44VV, 44VW, 44VX, 44VY, 44VZ, 44WA, 44WB,
44WC, 44WD, 44WE, 44WF, 44WG, 44WH,
44WI, 44WJ, 44WK, 44WL, 44WM, 44WN,
44WO, 44WP, 44WQ, 44WR, 44WS, 44WT, 44WU,
44WV, 44WW, 44WX, 44WY, 44WZ, 44XA,
44XB, 44XC, 44XD, 44XE, 44XF, 44XG, 44XH,
44XI, 44XJ, 44XK, 44XL, 44XM, 44XN, 44XO,
44XP, 44XQ, 44XR, 44XS, 44XT, 44XU, 44XV,
44XW, 44XZ, 44YA, 44YB, 44YC, 44YD, 44YE,
44YF, 44YG, 44YH, 44YI, 44YJ, 44YK, 44YL,
44YM, 44YN, 44YO, 44YP, 44YQ, 44YR, 44YS,
44YT, 44YU, 44YV, 44YW, 44YX, 44YY, 44YZ,
44ZA, 44ZB, 44ZC, 44ZD, 44ZE, 44ZF, 44ZG,
44ZH, 44ZI, 44ZJ, 44ZK, 44ZL, 44ZM, 44ZN,
44ZO, 44ZP, 44ZQ, 44ZR, 44ZS, 44ZT, 44ZU,
44ZV, 44ZW, 44ZX, 44ZY, 44ZZ, 44AA, 44AB,
44AC, 44AD, 44AE, 44AF, 44AG, 44AH, 44AI,
44AJ, 44AK, 44AL, 44AM, 44AN, 44AO, 44AP,
44AQ, 44AR, 44AS, 44AT, 44AU, 44AV, 44AW,
44AX, 44AY, 44AZ, 44BA, 44BB, 44BC, 44BD,
44BE, 44BF, 44BG, 44BH, 44BI, 44BJ, 44BK,
44BL, 44BM, 44BN, 44BO, 44BP, 44BQ, 44BR,
44BS, 44BT, 44BU, 44BV, 44BW, 44BX, 44BY,
44BZ, 44CA, 44CB, 44CC, 44CD, 44CE, 44CF,
44CG, 44CH

CENTRAL WESTERN ZONE CONVENTION

BAND ACTIVITY

A suggestion was made that the Standard Pre-

Due to the very windy weather last morning, contact with the power line QRM that listening on the 80 band was almost unbearable. DX heard included W, ZL, ZK1, VR2 and EP6. VE stations are now allowed to operate in this band. Active on the band are 4FD, 4GG, 4ST, 4HA, 4H1 and 4H2.

ATA donated six BGTs to be awarded at the next

The Blue Band this month again won 1st prize who not only added ZK1 to his list but won first place in the VK section in the Edgemoor Contest (a ZL contest). Congratulations Harry!

EASTERN ZONE

at night. I put out a very strong signal. I also heard with a good signal at night. I was improving and southern stations were getting the day. DX heard included W, VE, ZL and K. QRM from overseas commercial stations in this band has been very bad which makes one wish for

The monthly meeting of the sub-branch was held

California. Kilowatt. Very pleased to have cued with 7PA in the WJA. hook-up this month 7P's reports 1000 m-mb whp in 1K7 is only 130 pps now - what about it YE4?

28. The 28 Mc band working on 42200. 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901,

President NCR
NCR has been absent from the last few book-ings.

ZONE NEWS
Far Northern (Manager 4HK).—We believe the following Bams are active in this zone: 4HK, 4AX, 4HL and 4PM. An old timer in this area is looking for a change of call sign. 4QA now operating as 4TH. Newcomer to the zone is 4ZI on Thursday last.

NORTH EASTERN ZONE.

Townsville (Manager 4GD).—Little to report from this zone this month. All the boys getting ready for the first anniversary meeting of the Townsville Club at the end of September.

Me.

pleasure of visiting AEL. Eric showed us over the place and during the course of conversation we learned that Eric's achievements are more outstanding than we realized. Following facts speak for themselves. Communist worked 163 U.S. Consulate in Paris, France, 3,000 U.S. dollars, 2,000 U.S. dollars, national Certificates already won - DX CC (Australia), BERIC A WRE (phc and cw) and WRE 26 Mc WAC (phone and cw), and another to be added soon is DX CC (USA). Eric is also the first post-war VR member.

QUEENSLAND

The night of the 17th August came and passed and so did the general meeting. Amongst the thirty-six present were President (AWG), Secretary (JAG), ART and WAG. Matters discussed at great length were Library Service and the proposed increase in membership fees. ART was in rare form, with his usual blarney, and the blame for that night's quarrels was laid on him. A pleasing feature of the meeting was the presence of WAG, whose intelligent questioning was noted in quarters where it counts. Come again OM. Thinking over the meeting, one is reminded of the

SOUTH AUSTRALIA

The monthly general meeting of the VKS Division was held at the usual time and place and a very representative gathering was noticed. The lecturers for the night were SDW and AXI, who together gave a very interesting and instructive demonstration on the recently purchased Institute phillipscope and ear, except the demonstration was quite a success, and wit, Gordon handing the lecture aside, and Frank the practical, a good time was had by all. A vote of thanks was ably proposed by Ross Kelly, and the applause which followed clearly indicated that everyone was in agreement with his remarks. Visitors present included Mr. Wicks, Leo Hunt, George Jigouze J Newman, EXM and SDW.

SDW was introduced to the meeting as being connected with Diploids in VKS, and was somewhat dismayed at the near that went up from the meeting at this announcement. He need not have worried, as Larry always roars when the word diploids is

mentioned, whether it is from rage or to derisive I have never been quite sure. Anyway he looks like a regular guy, and cheerfully answered all the queries put up to him, but his answers were very discouraging, simply SO SO. Nevertheless it was good to see him, and we hope he comes over again.

I knew it would happen, when the country Hams were not getting much of a "go" in these notes there was a hand went up, and now that the country boys are satisfied, believe it or not, the city guys are passing caustic remarks concerning the lack of city doings. Wouldn't it somebody asked me the other day what they had to do to get out these notes. "Do something wrong I said, and you will soon find yourself in prison." This makes it very hard on the quiet and unassuming type like AMF for example, but at last I have caught up with him. I believe that he has made up one of those "scooper dooper" receivers with high gain tubes. It works very well too, until 3MD comes on the air, and then it can hear him from one end of the dial to the

other. The only thing you can do to it, is to try and get Don just behind him or something.

Hardly any activity from the city as so far had this month, mainly because of "the men fix" and the fact of poor conditions on all bands at night, which by the way has broken the morale of even the most ardent VKS. Heard a newcomer in 3JZ the other night, and was intrigued by the way he felt I should know the operator, but for the life of me could not place him. It worried me to such an extent that I made some enquiries and found it was Jack Young of 3AD time. Remember Jim and Jack Burgess of the "Rangaroo on Parade" from that station? Welcome Jack, and try to let me that you possess that precious possession, an XYL who is not only interested in Amateur Radio, but is also keen to get a ticket as well. (Show this to the wife fellows, but don't mention my name).

A small but ardent gang of VKs Hams indulged in the Juppall of the year recently when a certain VKS, high up in a financial straits purchased a well

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RED  LINE

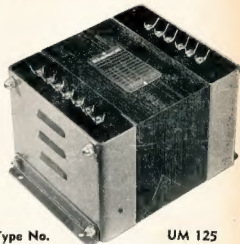
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RED LINE Modulation Transformers

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Type No.

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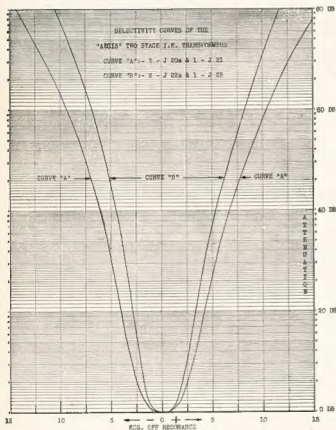


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